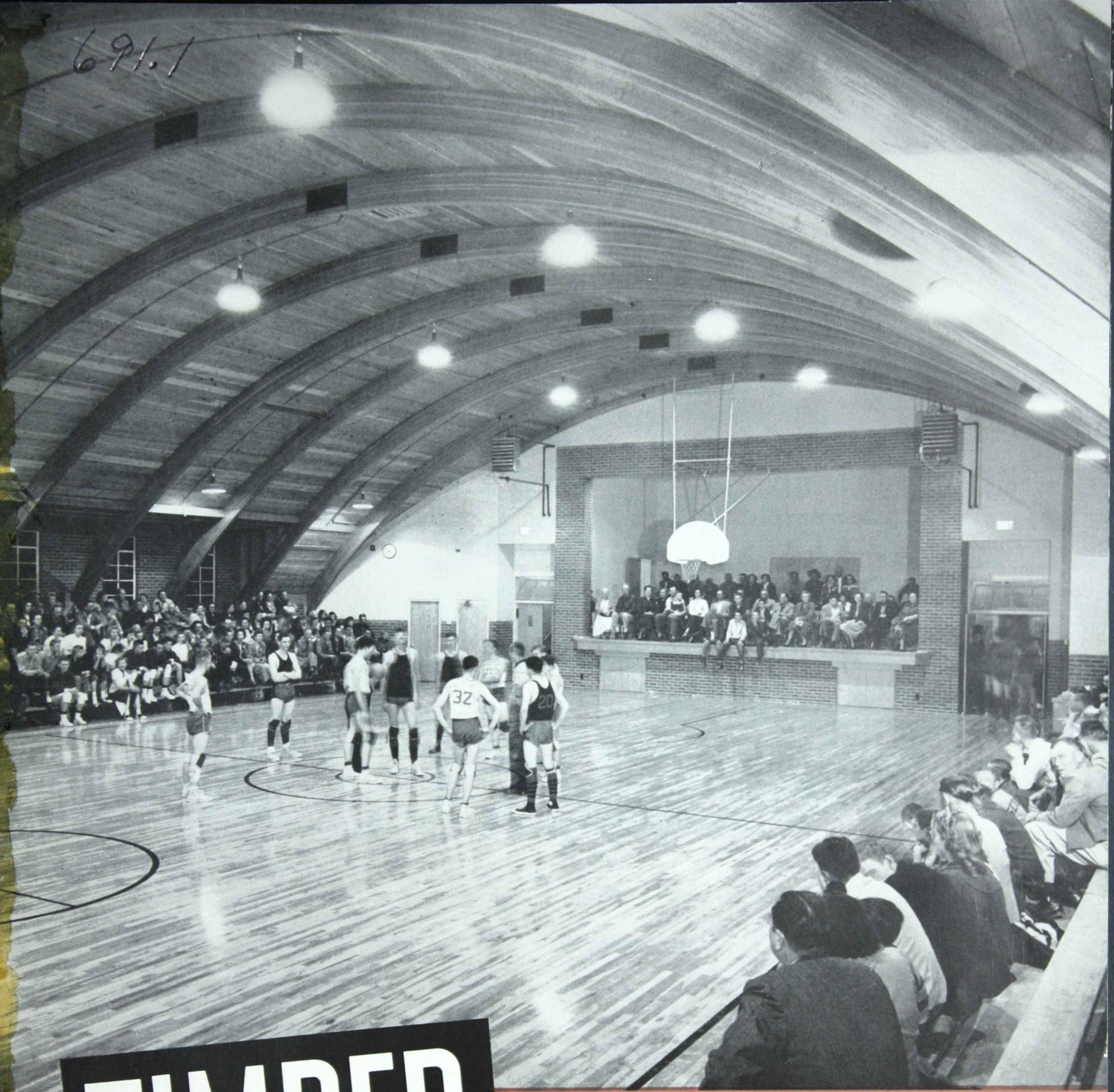
691.1

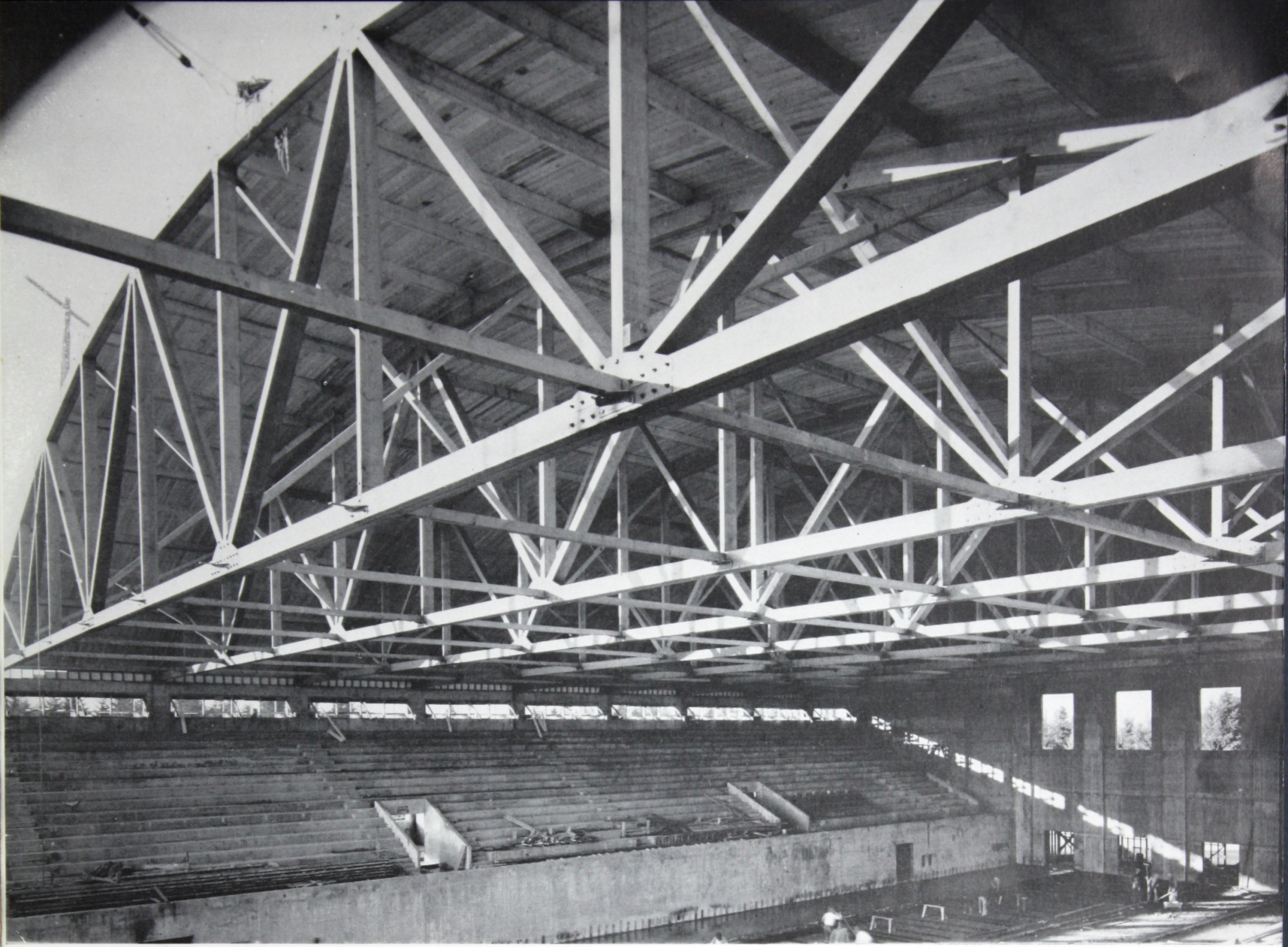


TIMBER
for RECREATIONAL BUILDINGS

TIMBER FOR
RECREATIONAL
BUILDINGS

Front Cover—School gymnasium, Bennett, Colorado. Byron Hale Kaufman, Architect. Glued laminated arches designed and fabricated by Rilco Laminated Products, Inc., St. Paul, Minnesota.

ID 89-B1687 TCF



The growing use of timber construction by architects and engineers for recreational buildings has kept pace with the increased use of this sturdy, versatile material in other fields of light and heavy frame construction.

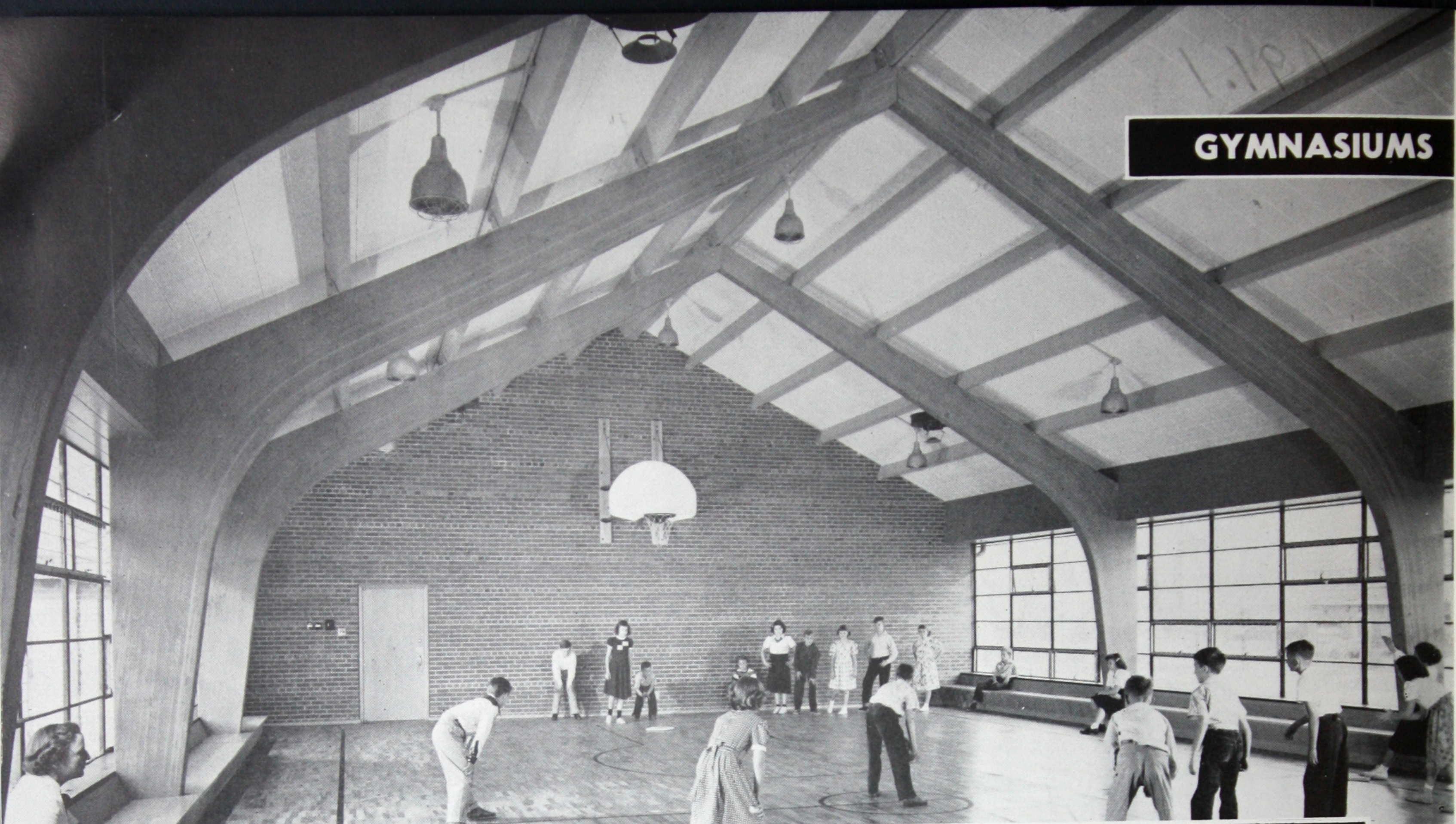
Recognizing the fact that fire safety in buildings of public assembly is primarily a matter of exits, timber construction is widely accepted. First costs are generally lower, and modern methods of fire prevention and fire protection reduce insurance costs.

An outstanding example of this recognition is the Field House of the College of Puget Sound, Tacoma, Washington, pictured above, which seats 5,000 people and is roofed over with 168′ clear span timber trusses and wood sheathing.

Three major systems of timber construction have developed to the benefit of those responsible for designing and building light and heavy frame structures: (1) The Teco connector system of construction, (2) Glued laminated construction, and (3) Lamella construction. These popular systems of timber construction may be used with confidence for all types of buildings. Experienced timber fabricators, listed in the back of this brochure, are located in all sections of the country.

The Timber Engineering Company, an affiliate of the National Lumber Manufacturers Association, presents this pictorial review for the benefit of architects and engineers now planning recreational facilities for private, public, and military use.

FD 89-13 1687 TCF

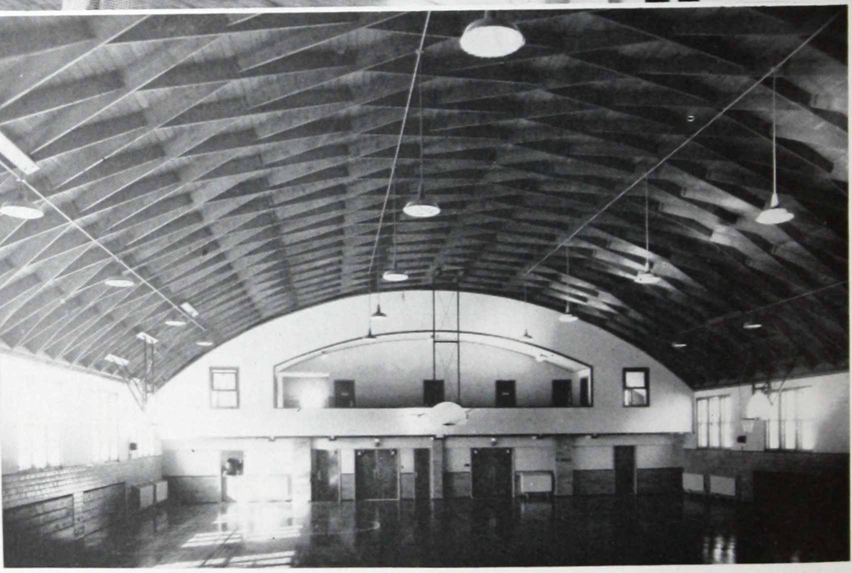


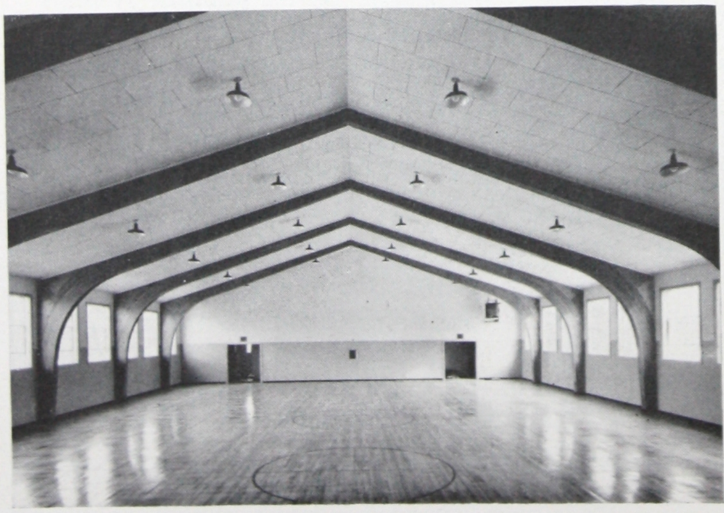
Above: Blythe Park School gym, Riverside, Illinois. Glued laminated arches designed and fabricated by McKeown Bros. Company, Chicago. Perkins and Wills, Architects-Engineers. Photo by Hedrich-Blessing Studio.

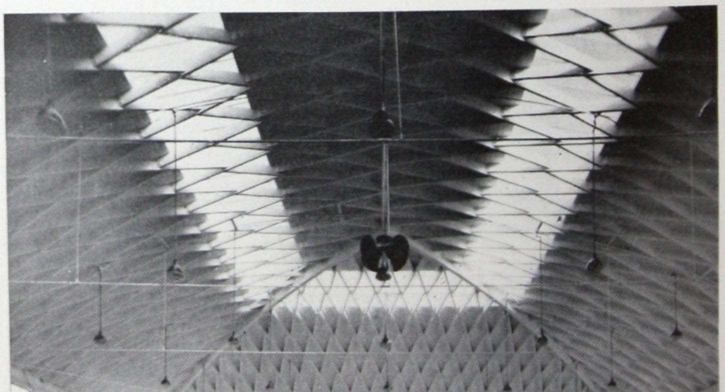
Right: Nerinx Hall gymnasium 75′ x 140′ Lamella wood roof designed, fabricated and erected by Roof Structures, Inc., Webster Groves, Mo. A. F. Stauder & Arthur Stauder, Architects, St. Louis.

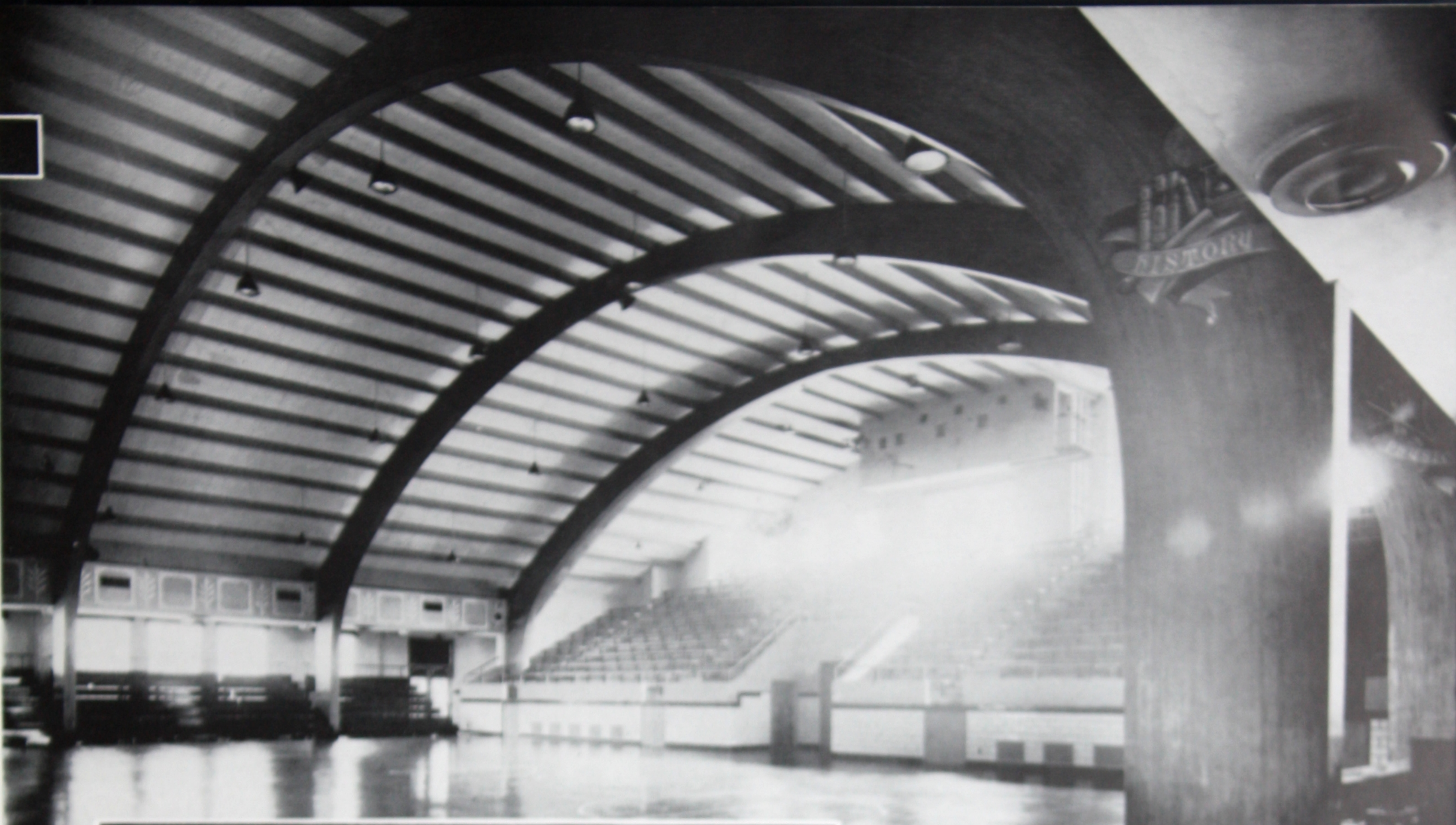
Bottom Right: Loyola University gym, Los Angeles, Calif. Lamella roof 94′ x 132′ designed, manufactured and erected by Summerbell Roof Structures, Inc., Los Angeles. Wallace Neff, Architect. McNeil Construction Company, Contractor.

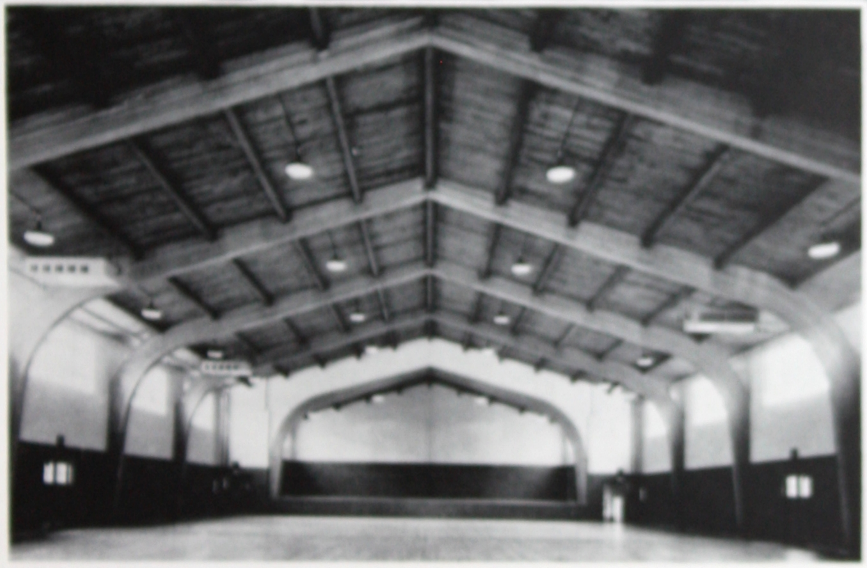
Below: Greenwood Gym, LaGrande, Oregon. Charles B. Miller, Architect. Glued laminated 64′ arches designed and manufactured by Timber Structures, Inc., Portland, Oregon.









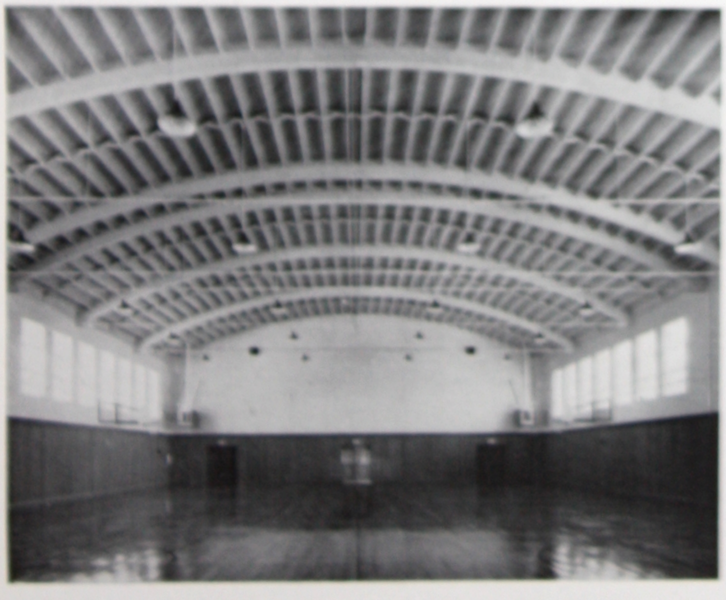


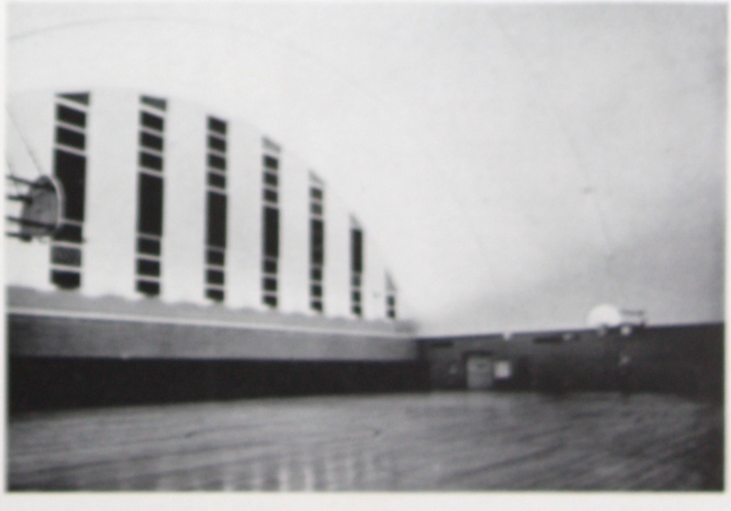
Above: St. Mary's Parochial School Auditorium and Gymnasium, Warren, Ohio. Stickle, Kelly and Stickle, Architects, Cleveland, Ohio. Glued laminated 97' arches that span the length of the playing floor were designed, fabricated and erected by Unit Structures, Inc., Peshtigo, Wis.

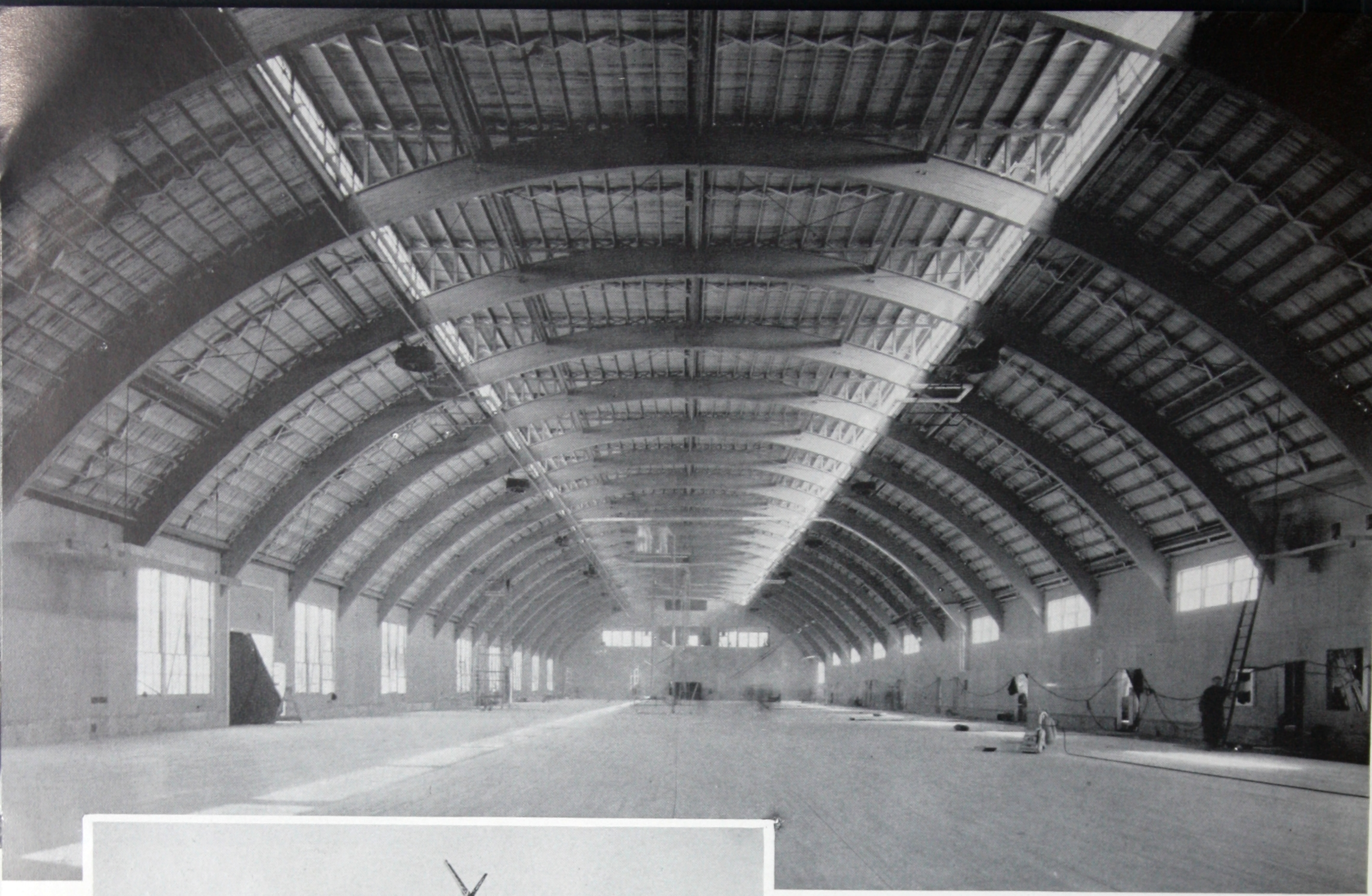
Left: Gymnasium and recreation building, Washington Missionary College, Takoma Park, Md. Ronald S. Senseman, Architect, Takoma Park, Md. Glued laminated 72' arches fabricated by Timber Structures, Inc., Portland, Oregon, and sold by James H. Carr, Inc., Washington, D. C.

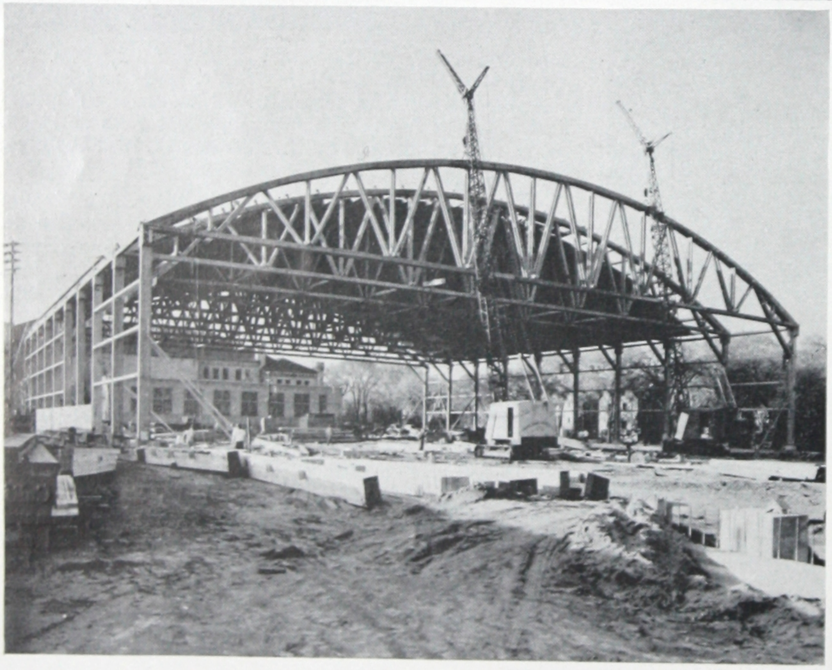
Lower Left: John Adams Jr. High School gym, Santa Monica, Calif. Joe M. Estep, Architect. Hillman & Nowell, Engineers. James I. Barnes Construction Co., Contractor. Glued laminated 70' arches designed, fabricated and erected by Summerbell Roof Structures, Inc., Los Angeles.

Lower Right: High school gym, Palm Springs, Calif. Harry J. Williams, Architect. W. D. Haxton, General Contractor. Glued laminated 106' arches designed and fabricated by Summerbell Roof Structures, Inc., Los Angeles, Calif.



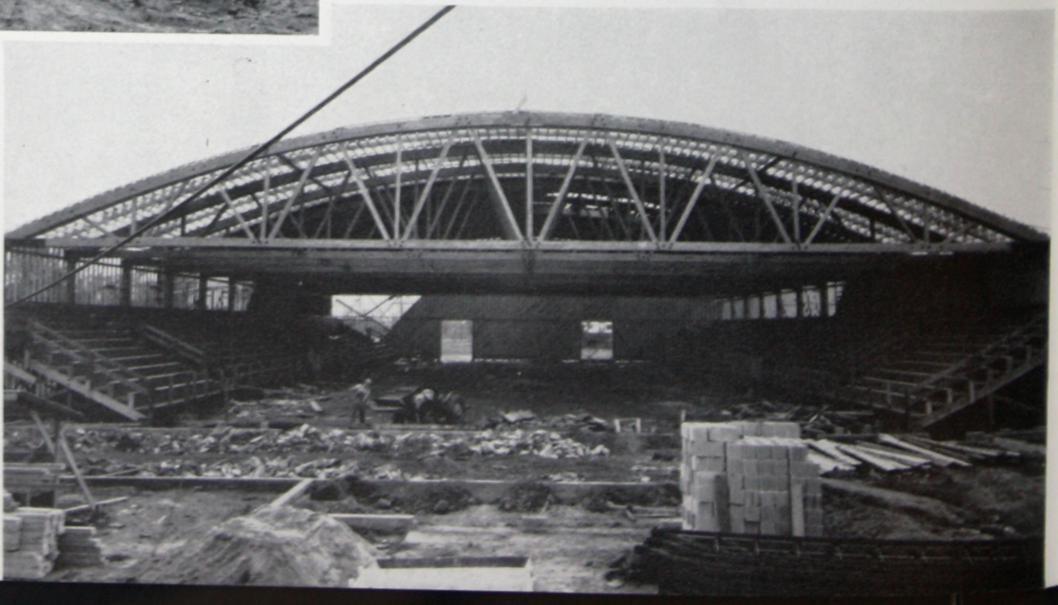






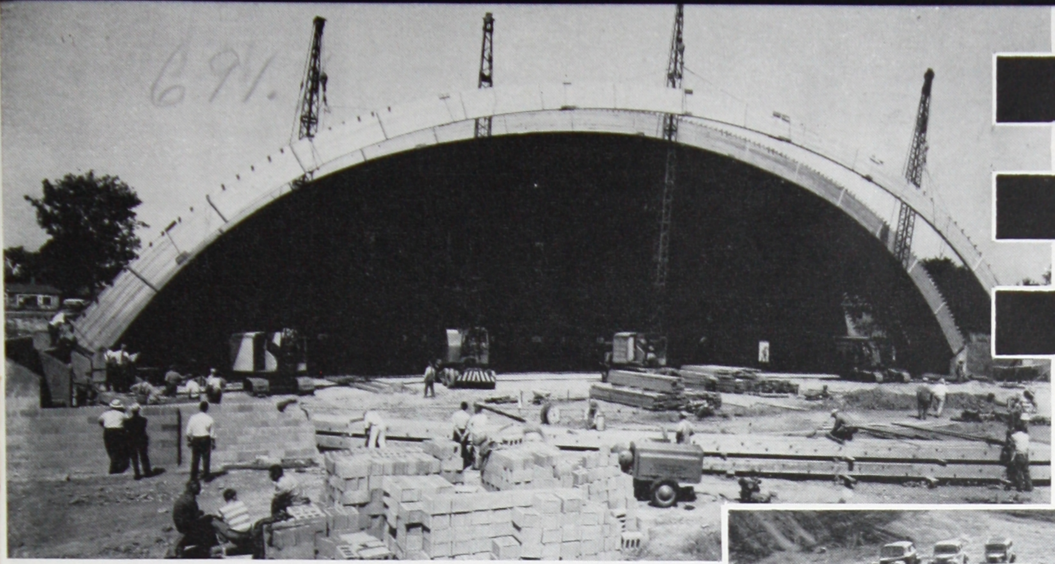
Above: Drill Hall, U. S. Naval Training Station, Great Lakes, Ill. Glued laminated arches designed and fabricated by McKeown Bros. Company, Chicago, Ill.

Left: Winter Sports Building (200′ x 400′), University of Minnesota. C. H. Johnston, Architect. Prefabricated timber trusses, using Teco connectors, designed and produced by Timber Structures, Inc., Portland, Oregon.



Right: Memorial Arena, Smith Falls, Ontario, Canada. Trusses of 128′ span and bleachers use Teco connectors supplied by J. E. Goodman Sales Co., Ltd., Toronto.

691.



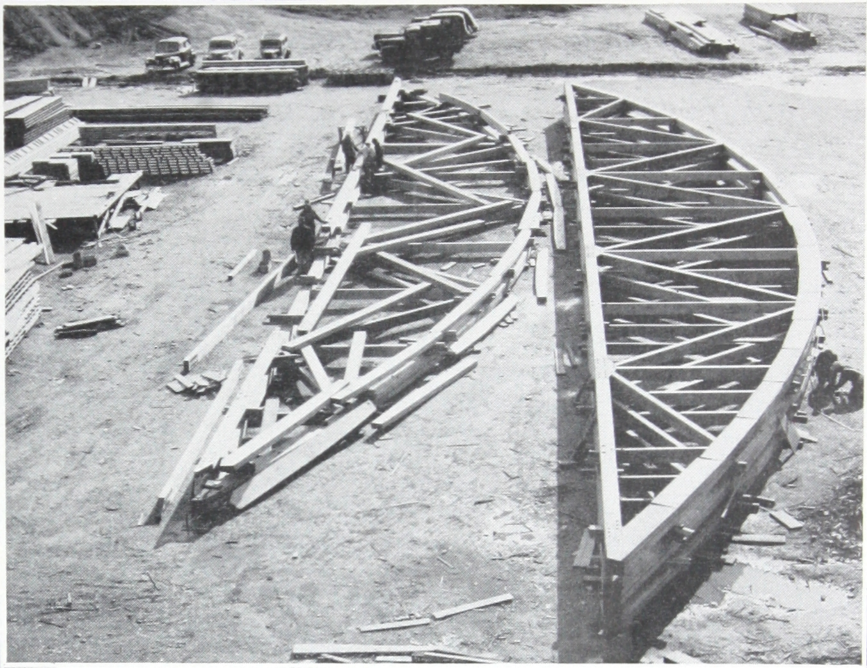
ARENAS

FIELD HOUSES

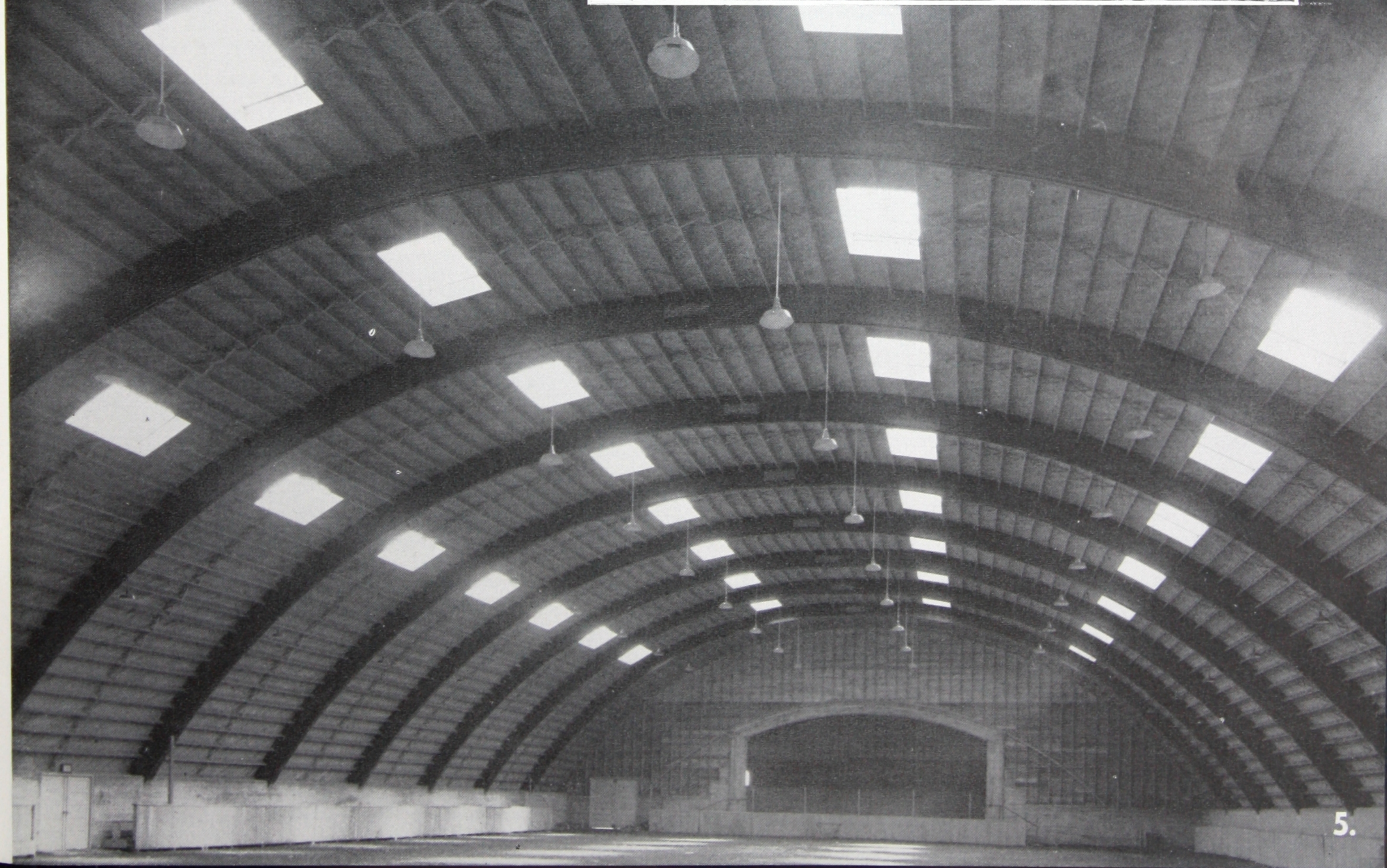
DRILL HALLS

Left: Four cranes erecting 210′ glued laminated arch at Grand Rapids, Michigan, sports arena. W. P. McLaughlin, Architect. George Datema & Sons, Contractors. Arches by McKeown Bros. Company, Chicago, Illinois.

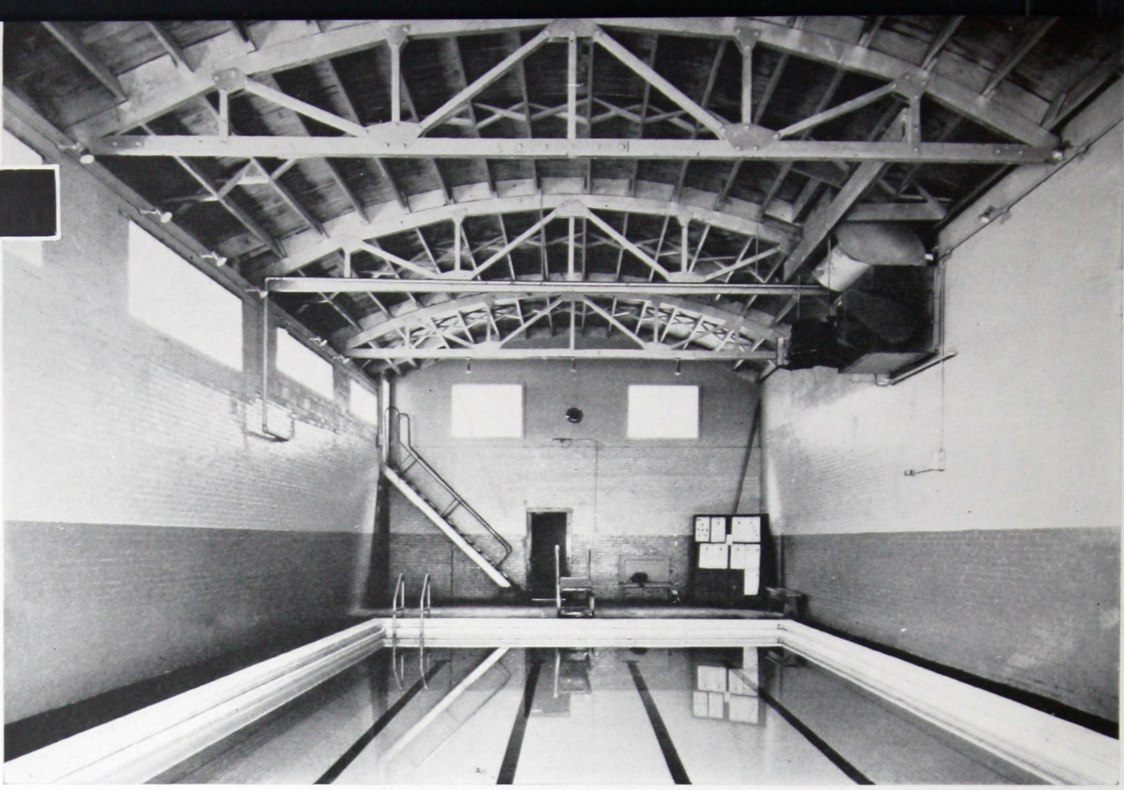
Right: Assembling 168′ Monocord roof trusses for Field House of the College of Puget Sound, Tacoma, Washington. Earl N. Dugan, associated with Mock & Morrison, Architects, Tacoma. Smith & Murray, Engineers, Tacoma. Trusses fabricated at Longview plant of the Weyerhaeuser Timber Company. Field House seats 5,000.

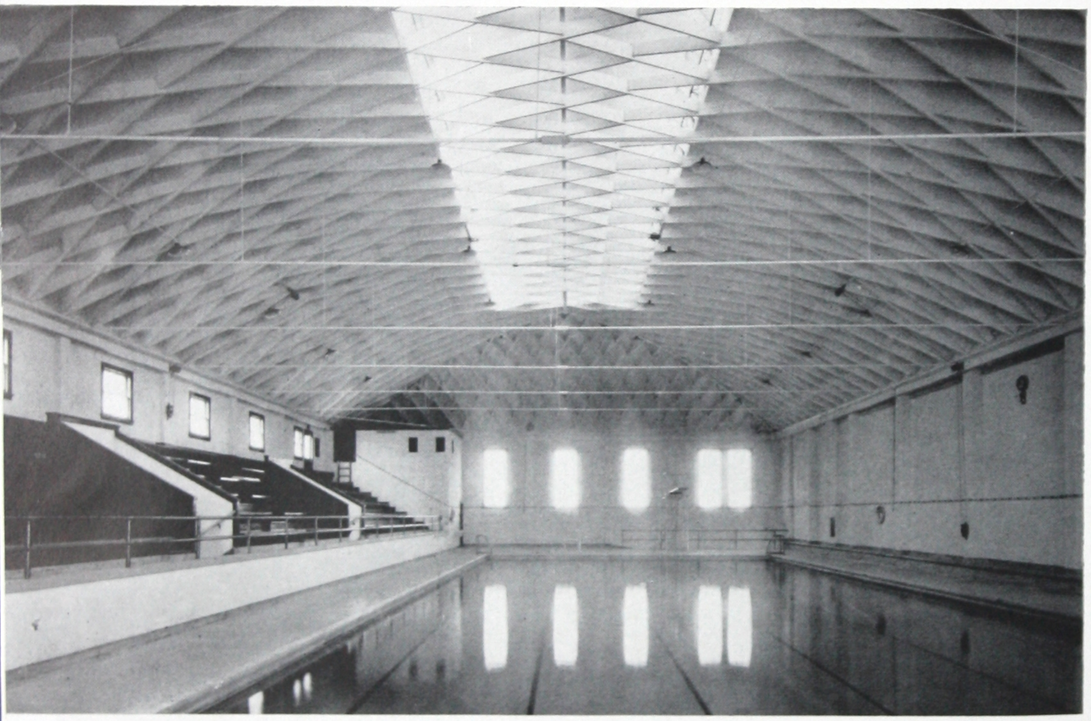


Below: Field House and Hockey Stadium, Gustavus Adolphus College, St. Peter, Minn. Glued laminated 120′ arches designed and fabricated by Unit Structures, Inc., Peshtigo, Wis.



SWIMMING POOLS

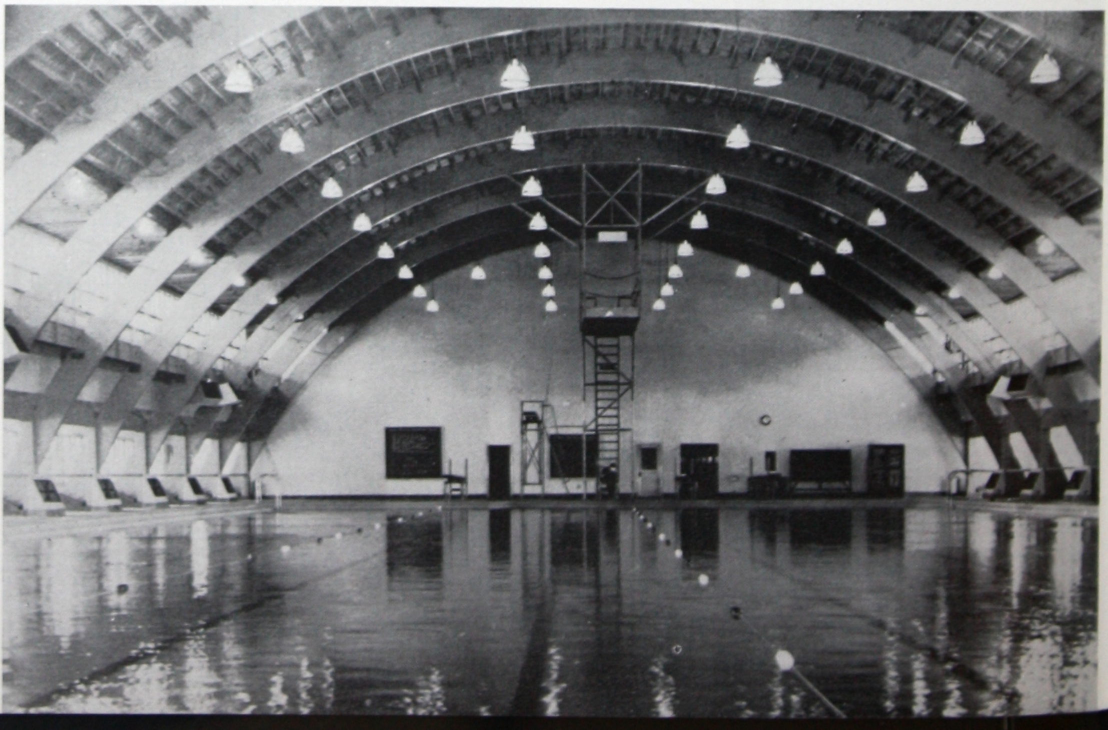


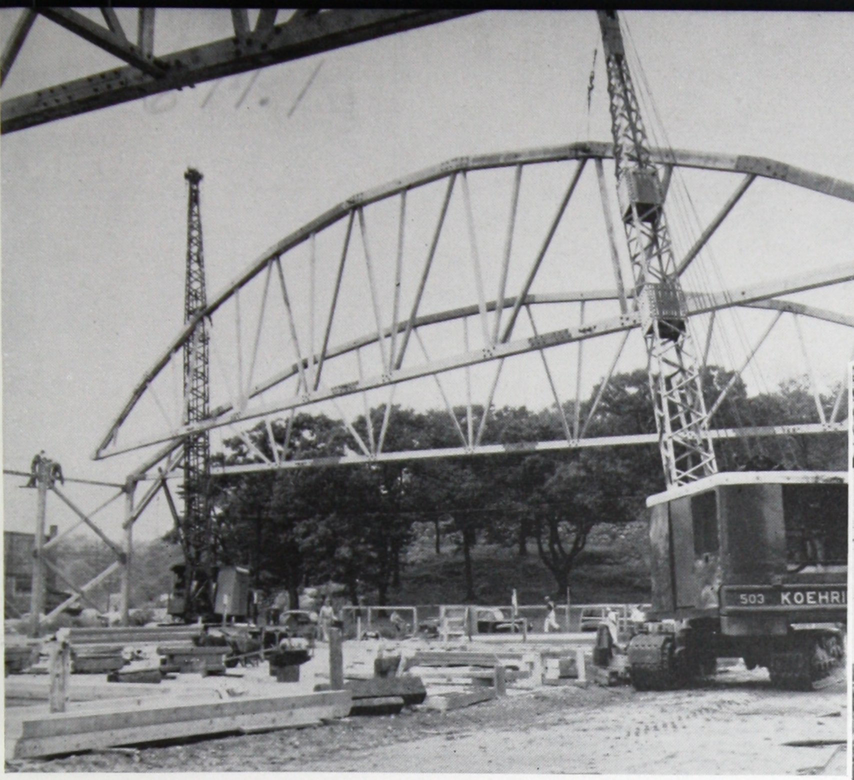


Above: Y.M.C.A. swimming pool, Longview, Washington. Monocord 40′ trusses using Teco connectors designed and fabricated by Weyerhaeuser Sales Company, Tacoma, Washington.

Below: Midwest Naval Air Station swimming pool. Glued laminated 110′ arches designed and fabricated by Rileo Laminated Products, Inc., St. Paul, Minn.

Above: High school swimming pool, Huntington Beach, Calif. Lamella wood roof designed and fabricated by Summerbell Roof Structures, Inc., Los Angeles, Calif.





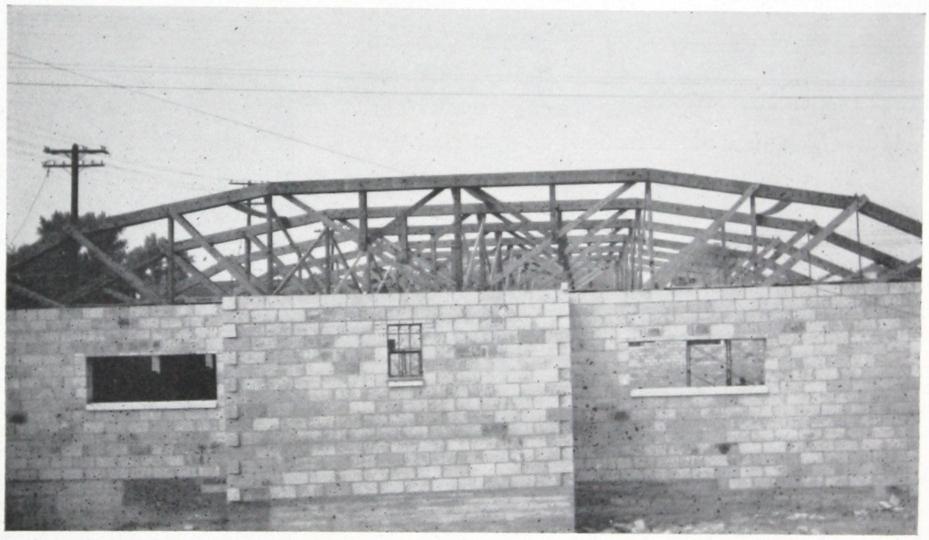
BOWLING ALLEYS

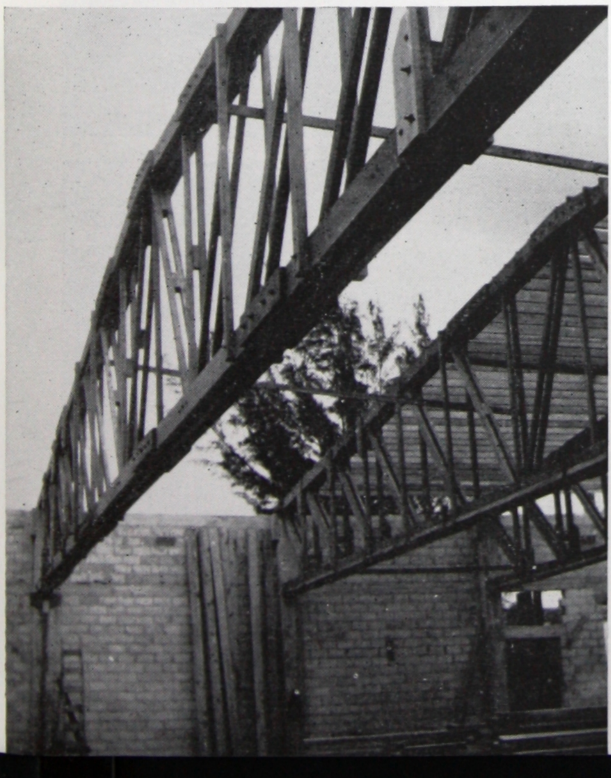
Above and Right: North Shore Sports Center and Rink, Lynn, Mass. Views show erection of one of 14 trusses of 142′ span and over-all view of building that seats 3,000 spectators. Trusses fabricated by Weyerhaeuser Sales Co., Newark, N. J. Teco connectors supplied by Timber Engineering Company of New England, East Boston, Mass.

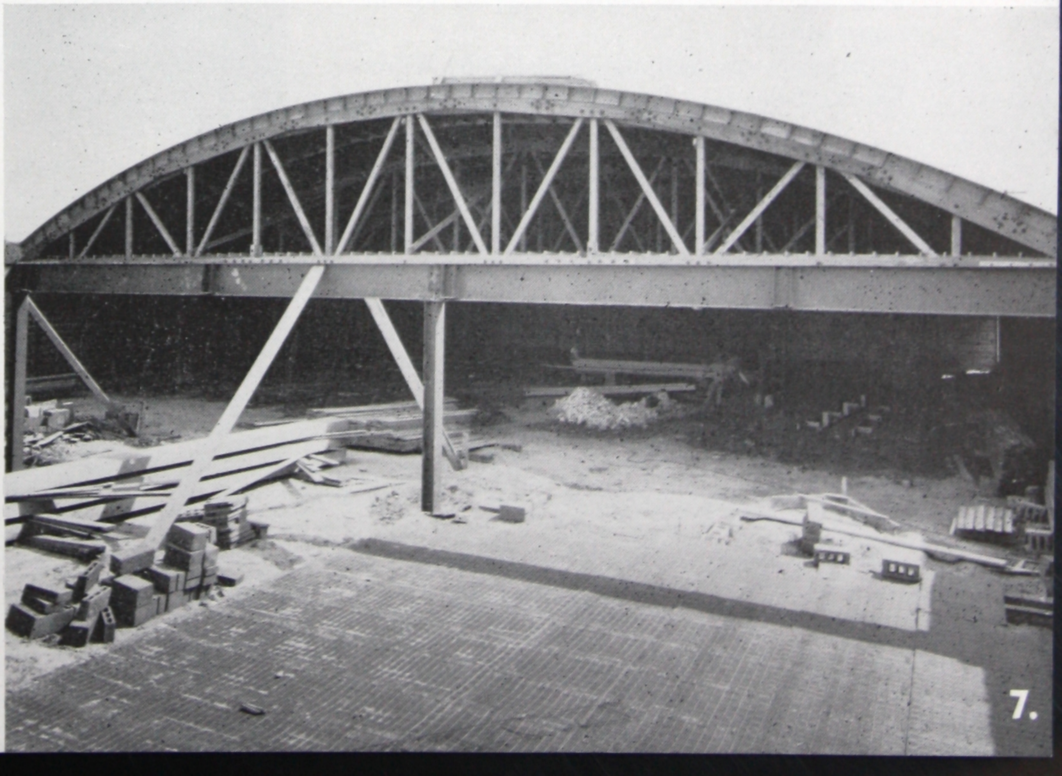
Center Right: Bowling Alley, North Tonawanda, New York. Modified 88′ bowstring trusses designed and fabricated by Cartwright & Morrison, Holcomb, New York.

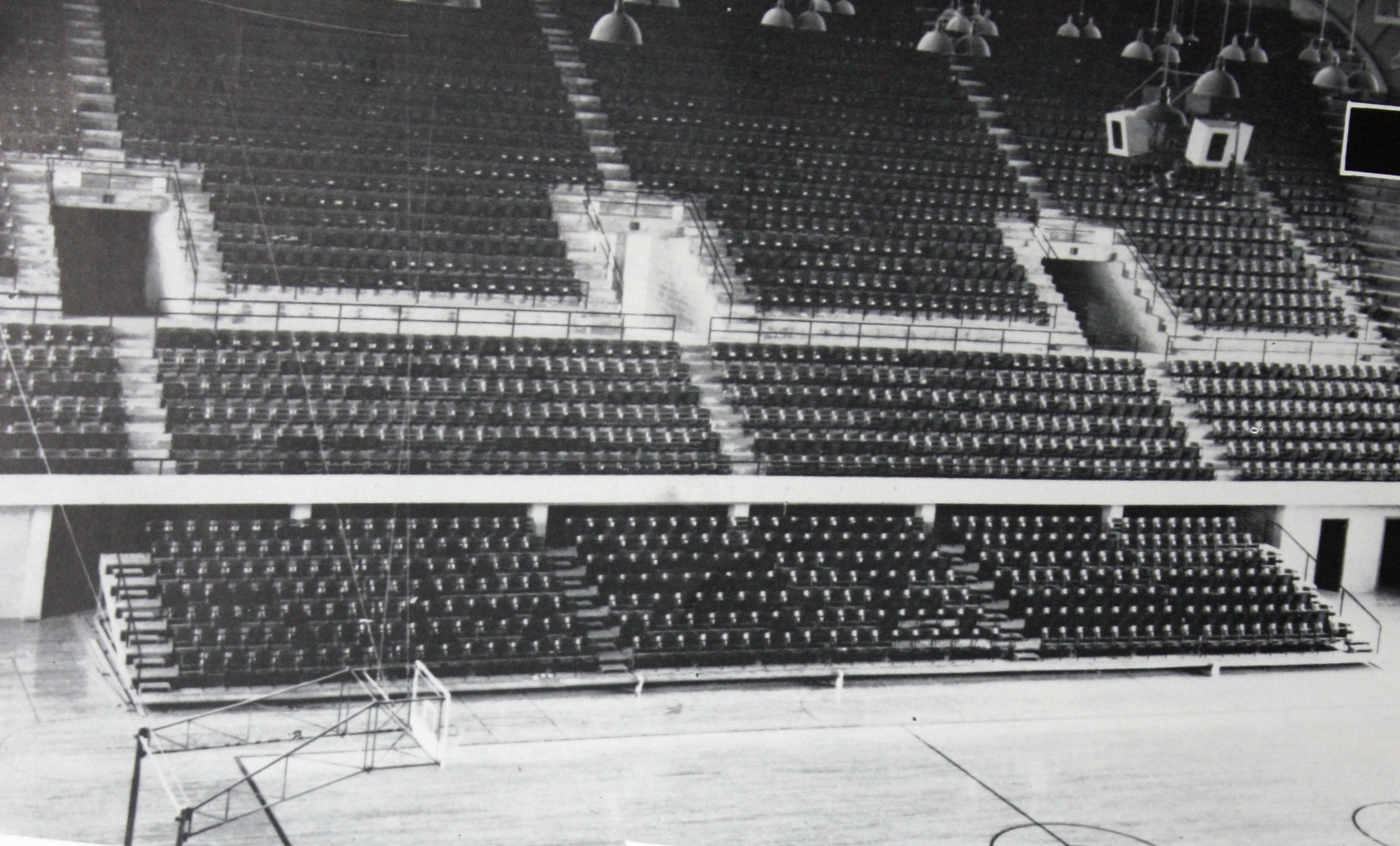
Bottom Left: Playdeum Bowling Alley, 99′ trusses spaced 16′ o.c., Coral Gables, Fla. Building accommodates 10 alleys. Design by L. B. Taylor, Miami, Fla. Teco connectors furnished by A. L. Rankin, Miami.

Bottom Right: Fantasy Bowling Alley, Detroit, Michigan. Bowstring trusses, using Teco connectors, designed and fabricated by Timber Structures, Inc., Portland, Oregon. Trusses assembled and erected by Timber Services, Inc., Detroit.

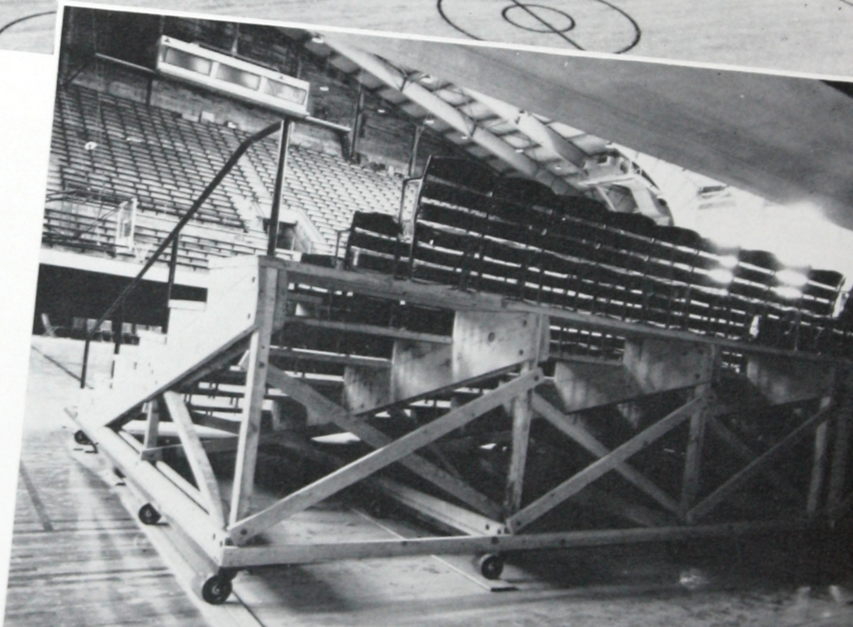








Above: Top view of six sections on gym floor.



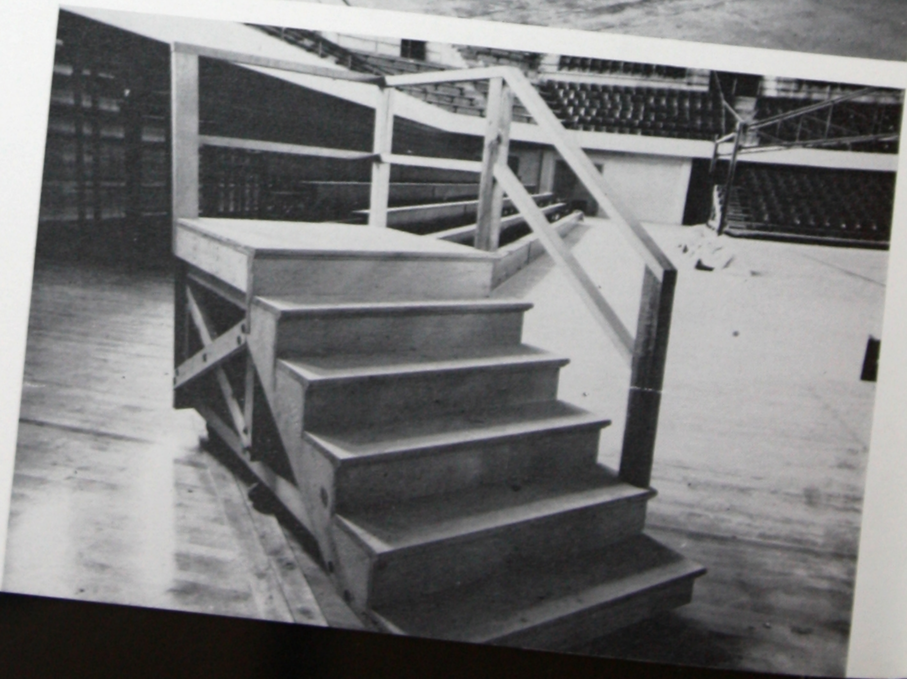
The roll-in type of portable seating furnished the Oregon State College Pavilion, Corvallis, Oregon, is particularly worthy of mention. Other schools and places of public assembly may have need for such a product, and designers should know of its availability.

There were thirty-three stage platform units with sections 4′1″ x 8′4″ and 3′6″ in height. The seven movable chair platforms were each 18′ x 17′6″. The system for the castor connections also served as bearing support for the superstructure.

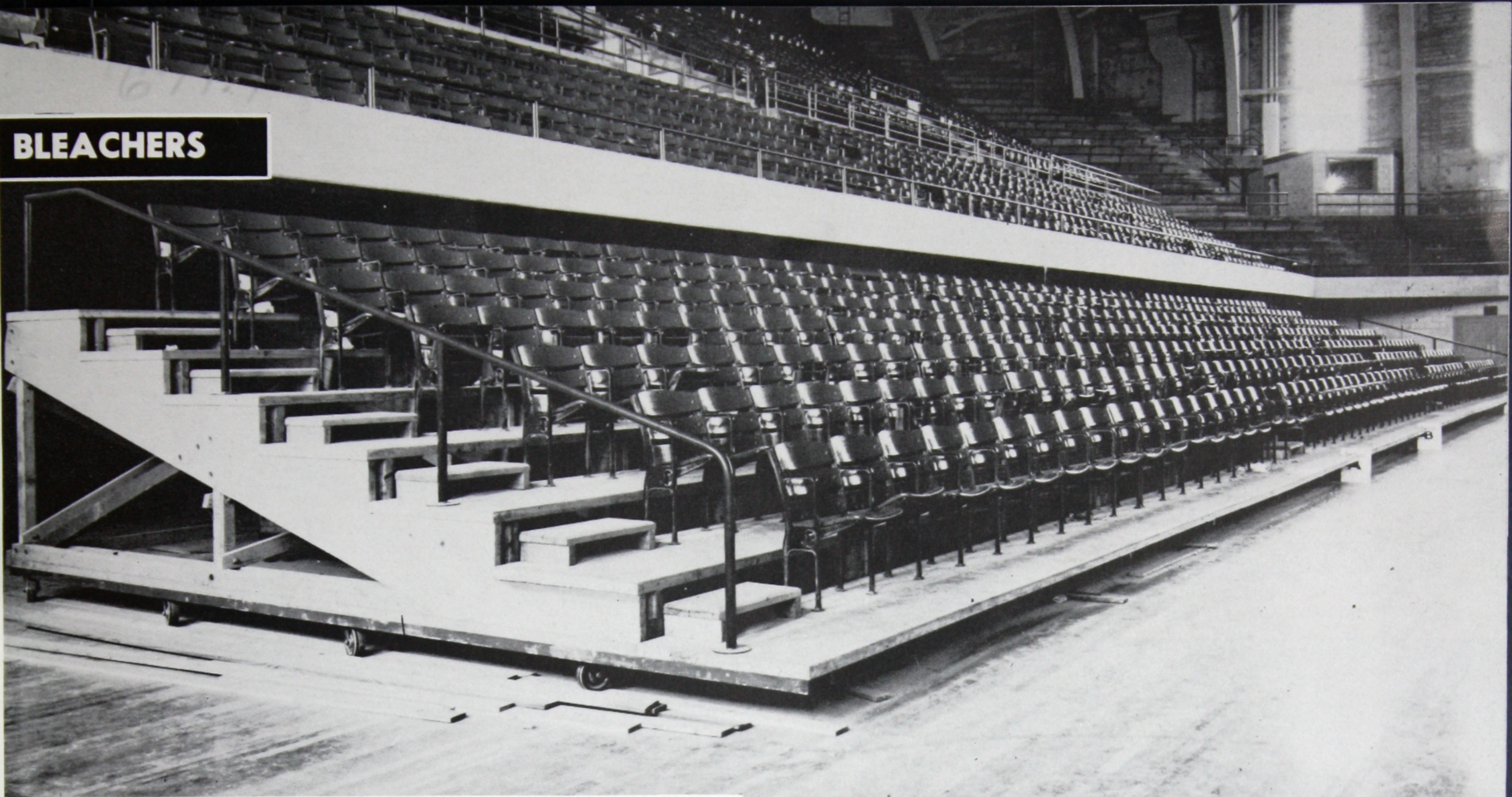
Bleachers designed and furnished by Weyerhaeuser Sales Co., Tacoma, Washington.

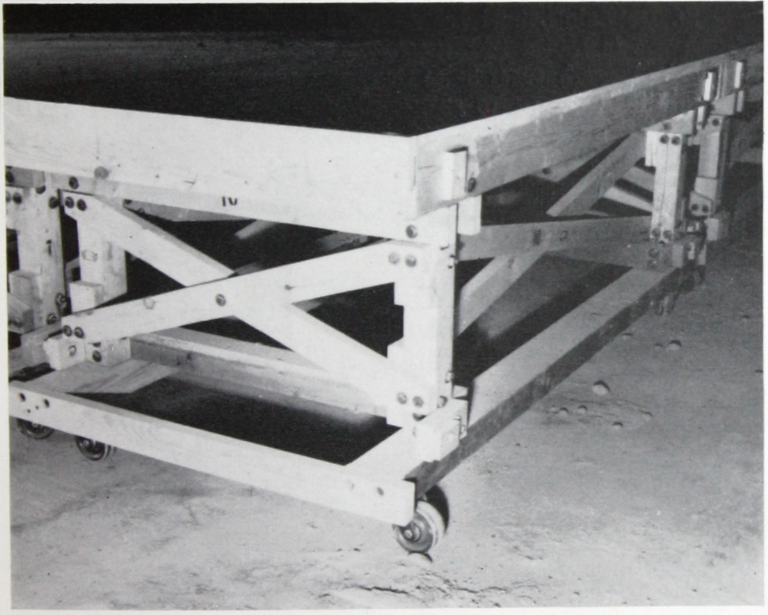
enter Right: Rear, angle view showing framing stem and rollers.

wer Right: Roll-in stair for portable stage tform.



BLEACHERS

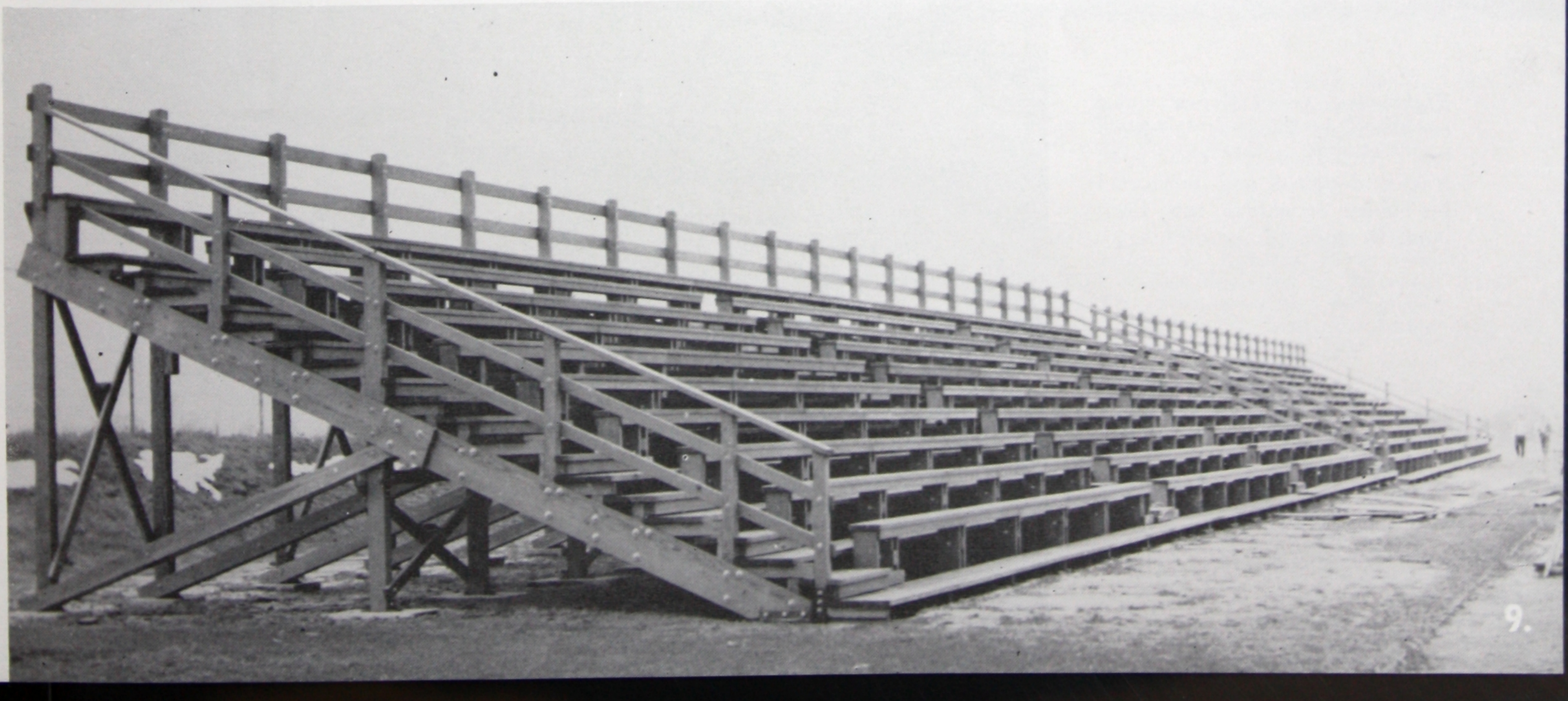




Above: Side view of six sections on gym floor.

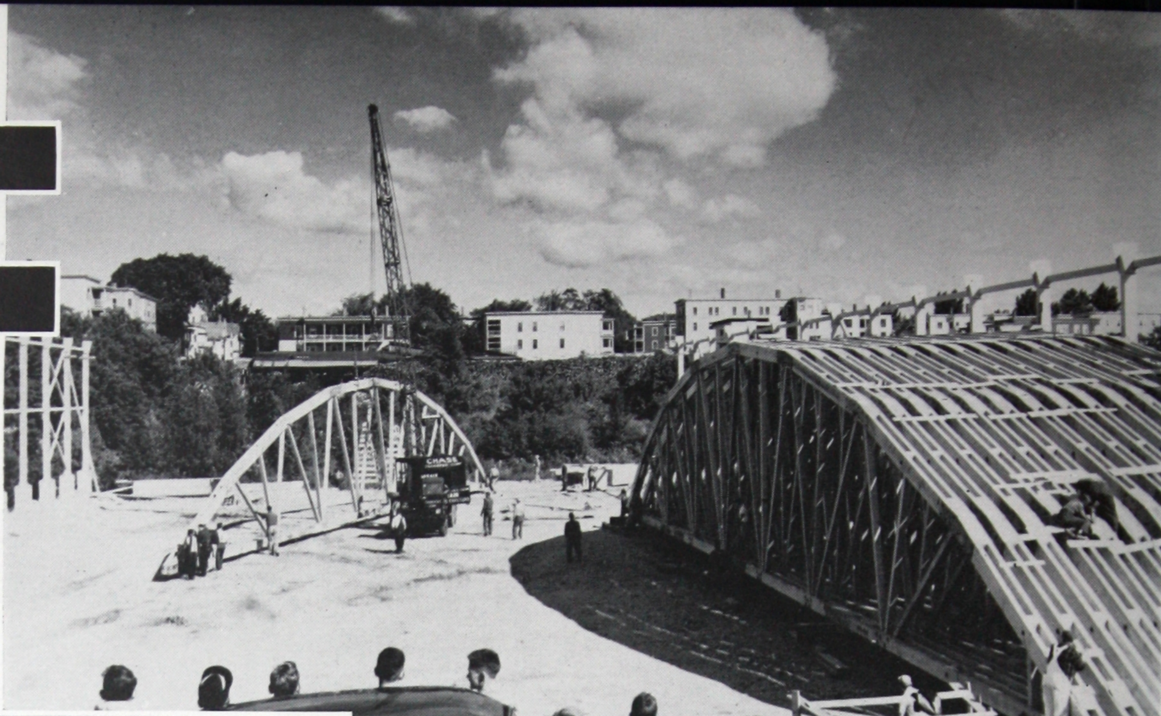
Left: Portable roll-in platform stage. Thirty-three units of this type were furnished.

Below: Outdoor bleachers, Board of Education, Rochester, New York. Designed and fabricated with Teco connectors by Cartwright and Morrison, Holcomb, N. Y.



SKATING RINKS

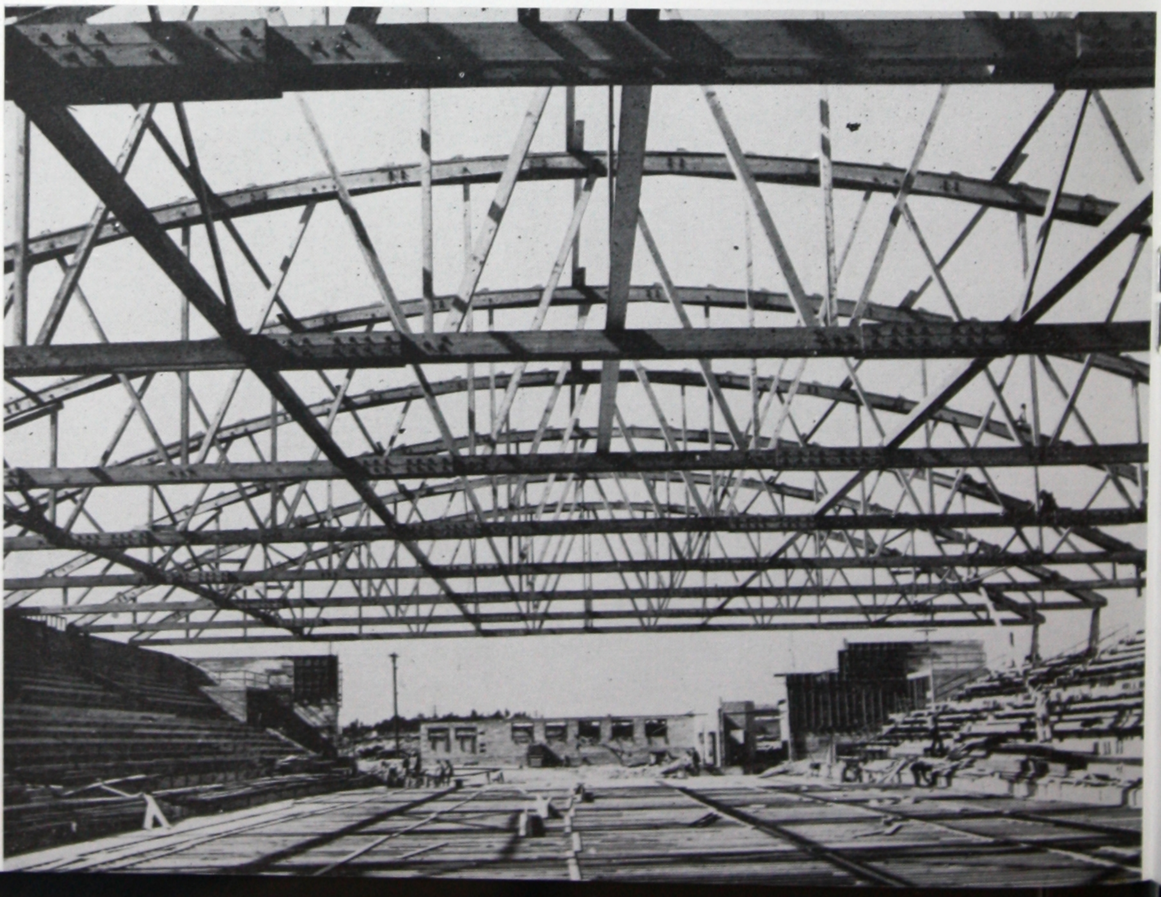
CURLING RINKS

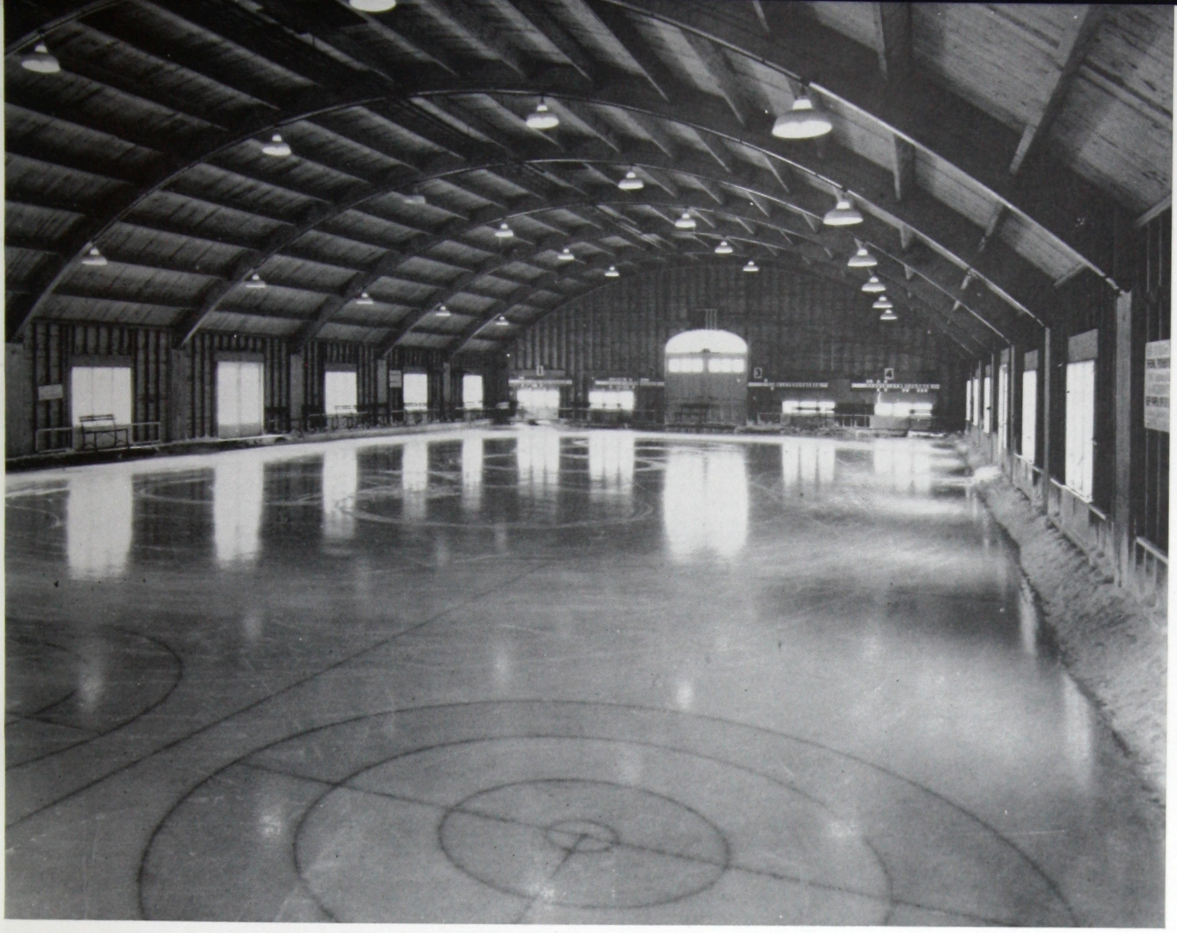


Above: Trusses of 130′ span ready to erect at St. Dominic School Ice Arena, Lewiston, Maine. Arena is 130′ x 240′ long with ceiling height of 28′. Weyerhaeuser Sales Company, Newark, N. J. furnished the entire structural framework of the building. Teco connectors supplied by Timber Engineering Company of New England, East Boston, Mass.

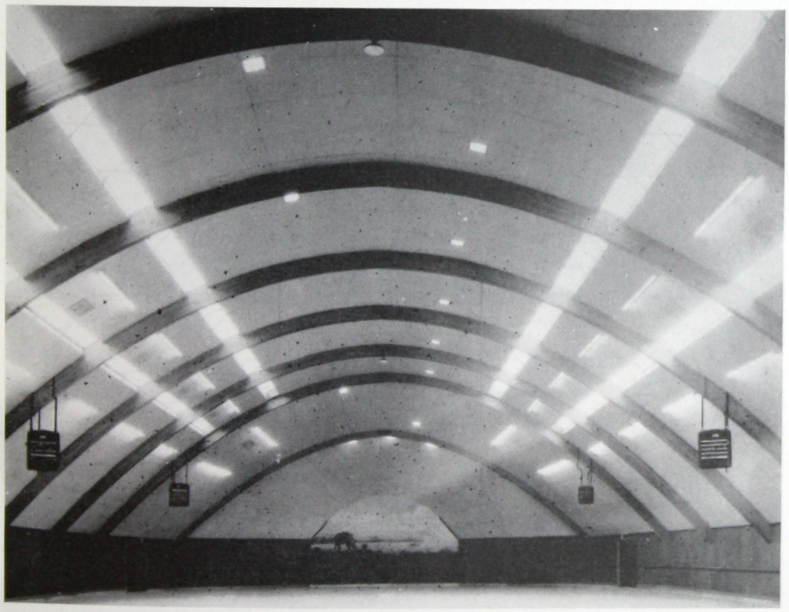
Above: Skating Rink 72′ x 150′, Kingston, Pa. Ten 72′ bowstring trusses designed and fabricated by Rilco Laminated Products, Inc., Wilkes-Barre, Pa.

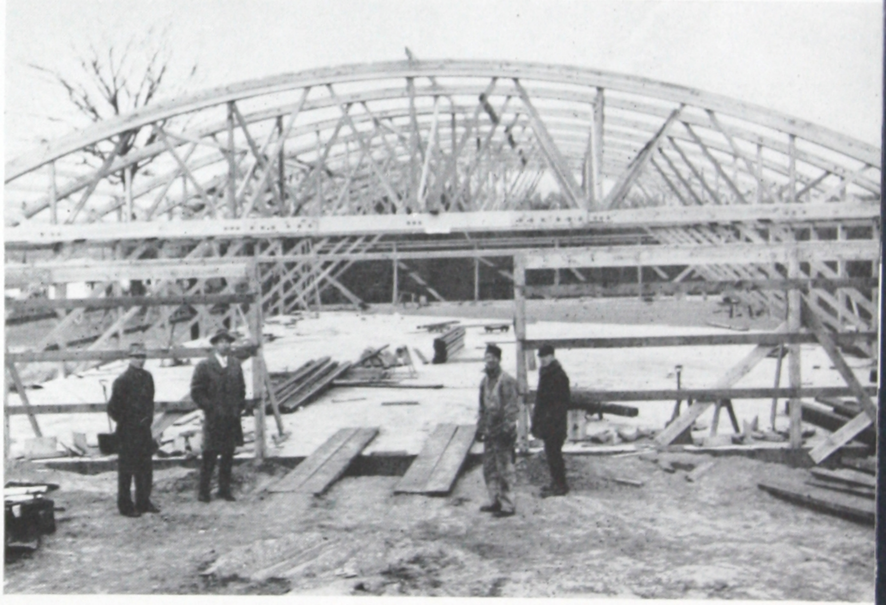
Right: Ice Arena shown under construction, Tacoma, Washington. Arch-Teco 160′ clear span trusses designed and fabricated by Timber Structures, Inc., Portland, Oregon.

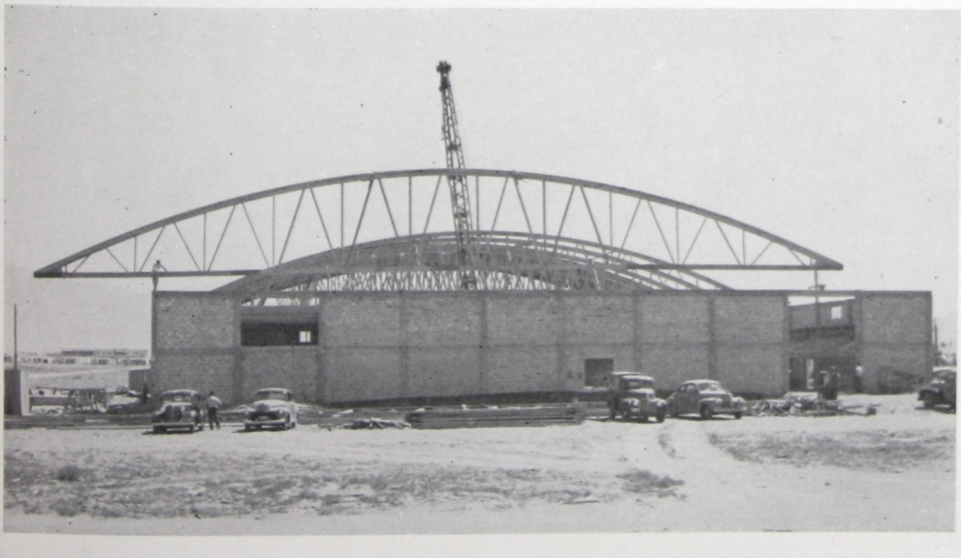




Left: Municipal Curling Rink, Wauwatosa, Wisconsin. Curling, a Scotch game popular in Northern U. S. and Canada, is played by 4 man teams sliding toward a mark flat 12″ circular stones, weighing about 35# each, on an ice court 42 yards long. Glued laminated 72′ arches designed and fabricated by Unit Structures, Inc., Peshtigo, Wis.







Center Left: David Sternberg Skating Rink, York, Pa. Glued laminated 90′ arches designed and fabricated by Rilco Laminated Products, Inc., Wilkes-Barre, Pa.

Center Right: Skating Rink 60′ x 132′ under construction Anamosa, Iowa. Ten bowstring trusses fabricated by Anamosa Lumber Co. Teco connectors and grooving tools supplied by Nebraska Bridge Supply & Lumber Co., Omaha, Neb.

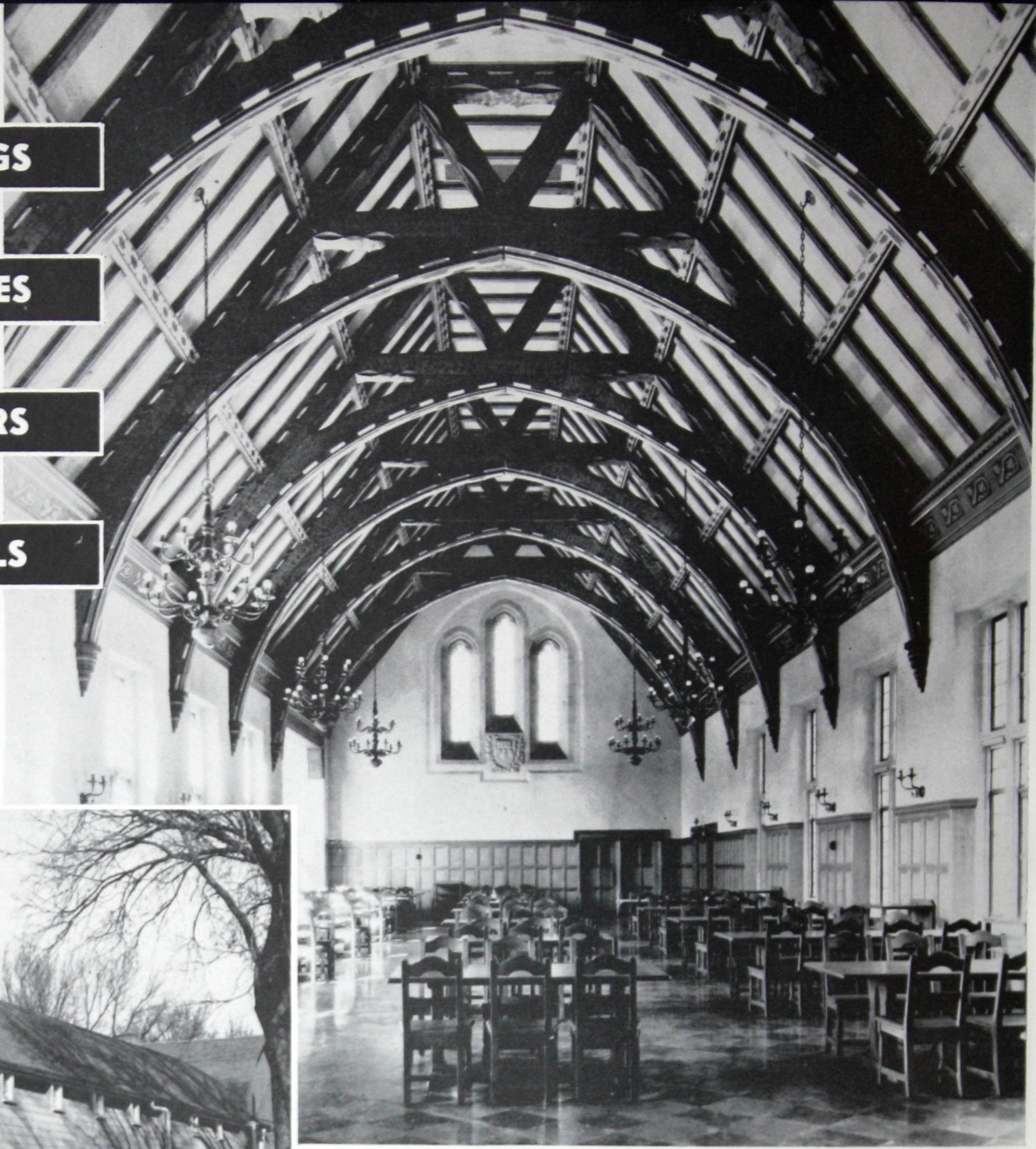
Left: Erecting 150′ bowstring wood trusses for ice skating rink at Albuquerque, New Mexico. Trusses, using Teco connectors, were designed, built and erected by American Roof Truss Co., Chicago, Ill.

COMMUNITY BUILDINGS

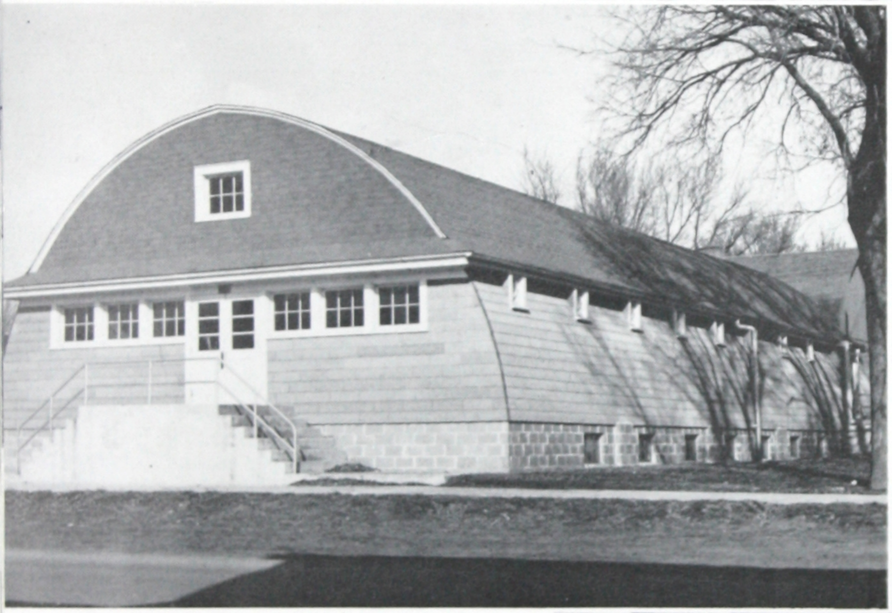
CLUB HOUSES

RECREATION CENTERS

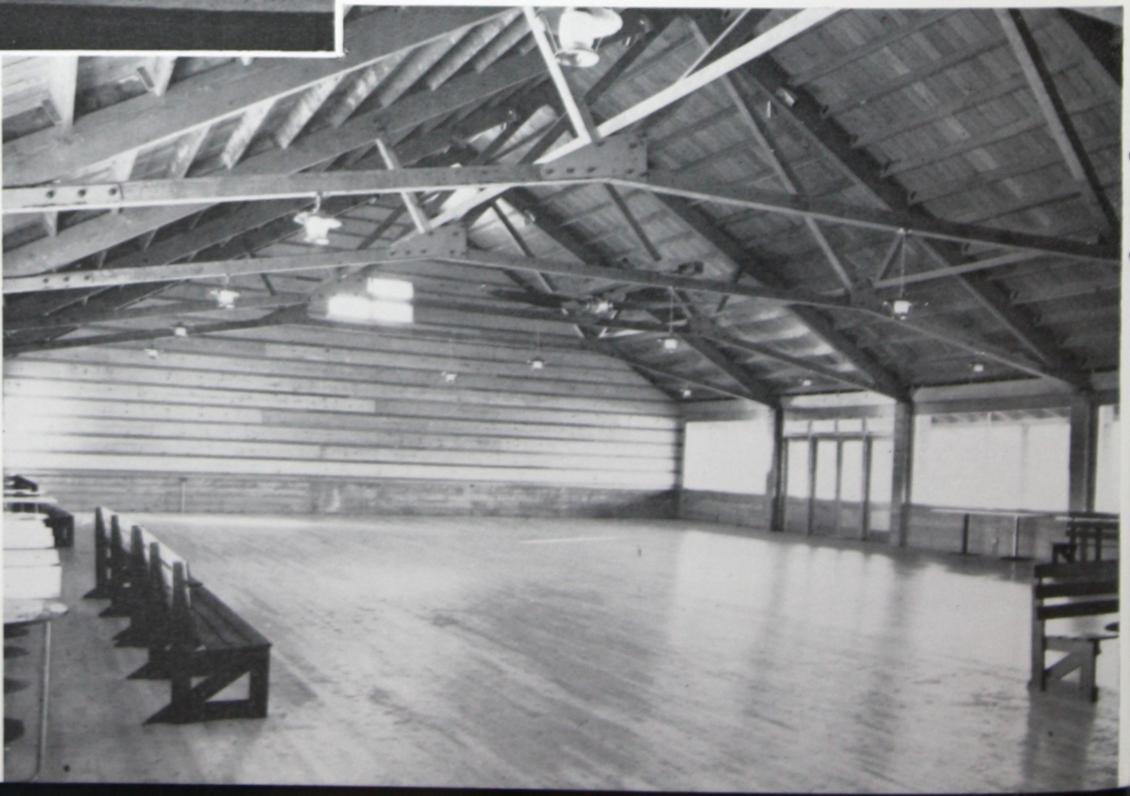
DINING HALLS



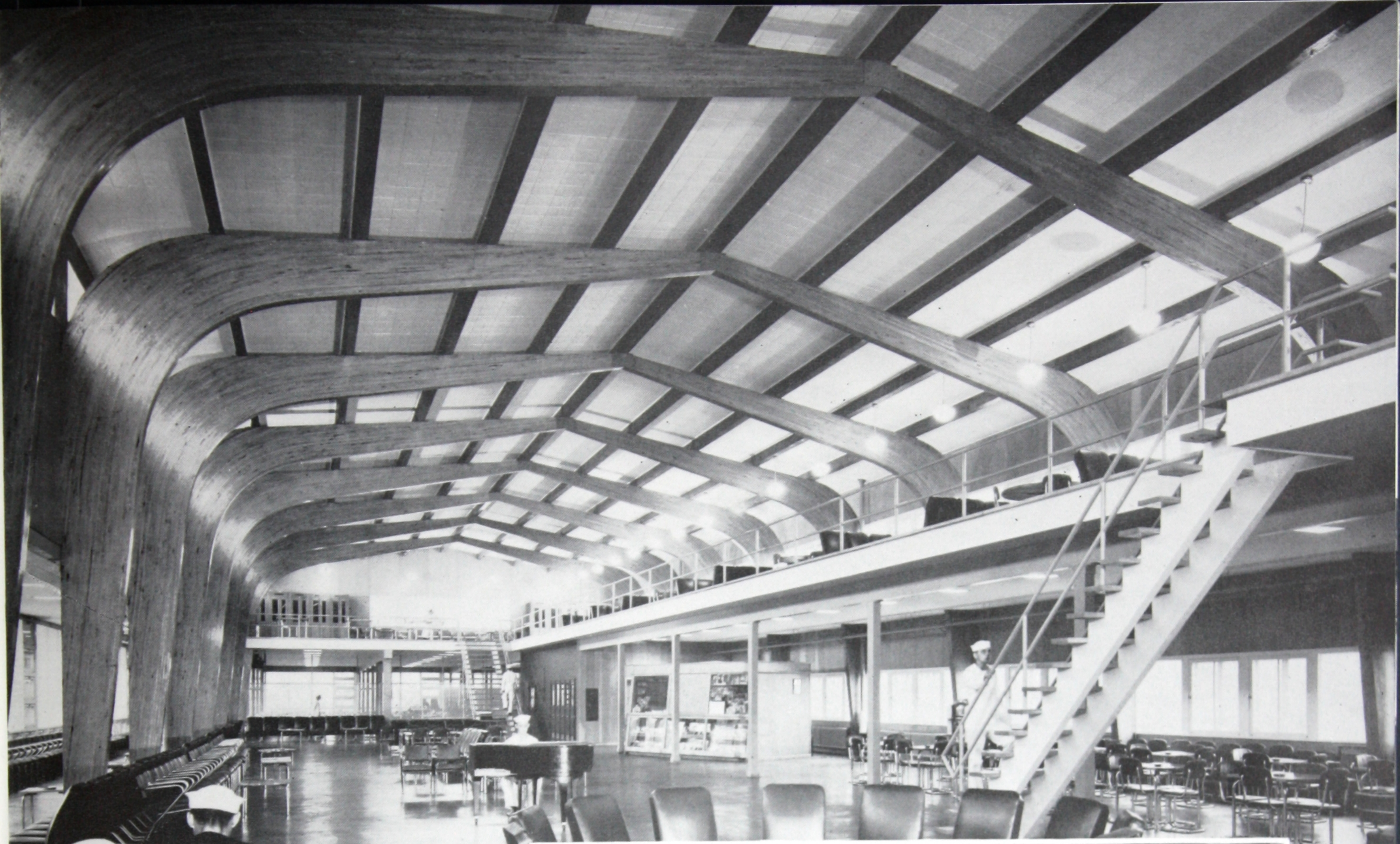
Above: Dining Hall, University of Chicago. Zantzinger, Borie and Medary, Architects. Timber trusses designed and fabricated by McKeown Bros. Company, Chicago.



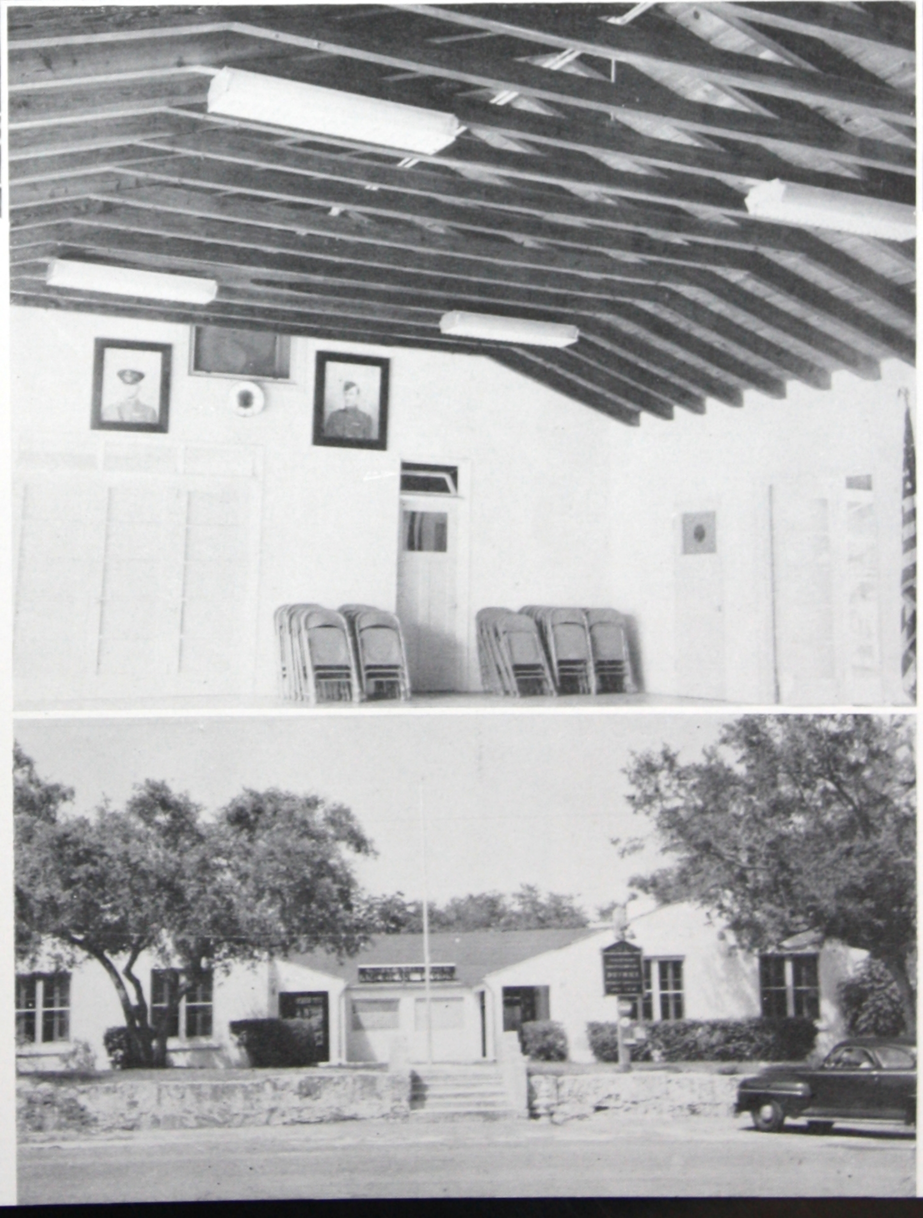
Above: Community Building, Rudd, Iowa. Glued laminated arches designed and fabricated by Rilco Laminated Products, Inc., St. Paul, Minn.



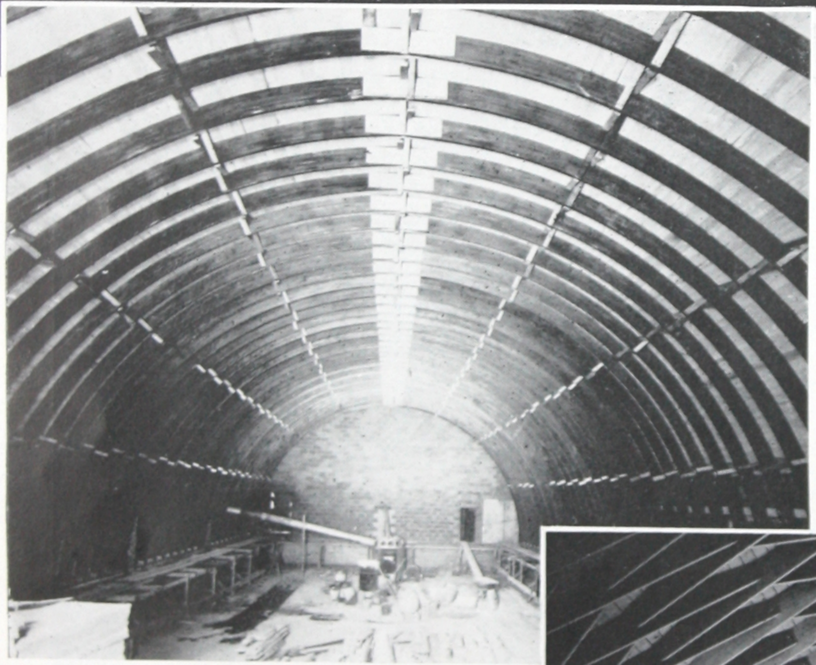
Right: Tacoma Sportsman's Club House, Tacoma, Wash. Pitched 50′ Monocord trusses with raised lower chord, fabricated by Weyerhaeuser Sales Co., Tacoma, Wash.



Above: Recreation building, U. S. Navy, Great Lakes, Ill. Glued laminated arches designed and fabricated by Unit Structures, Inc., Peshtigo, Wis.



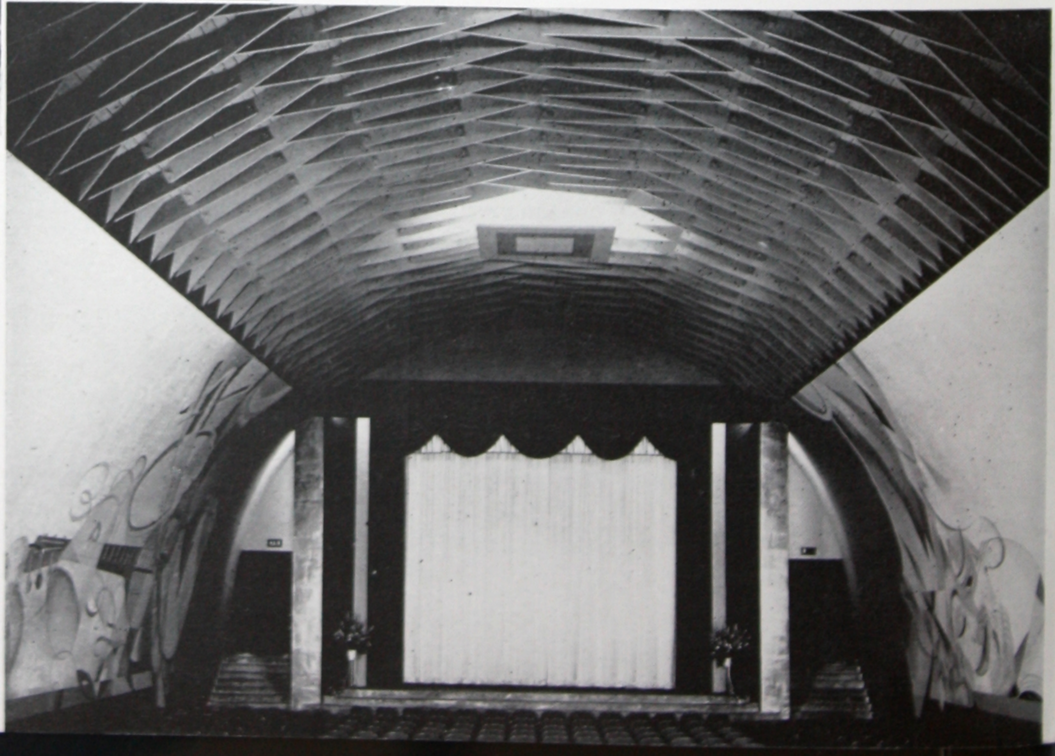
Right and Below: Exterior and interior American Legion Hall, Coconut Grove, Florida. George E. Watson, Engineer. Tied rafters with Teco split ring joints fabricated by Timber Fabrications, Inc., Miami, Fla.

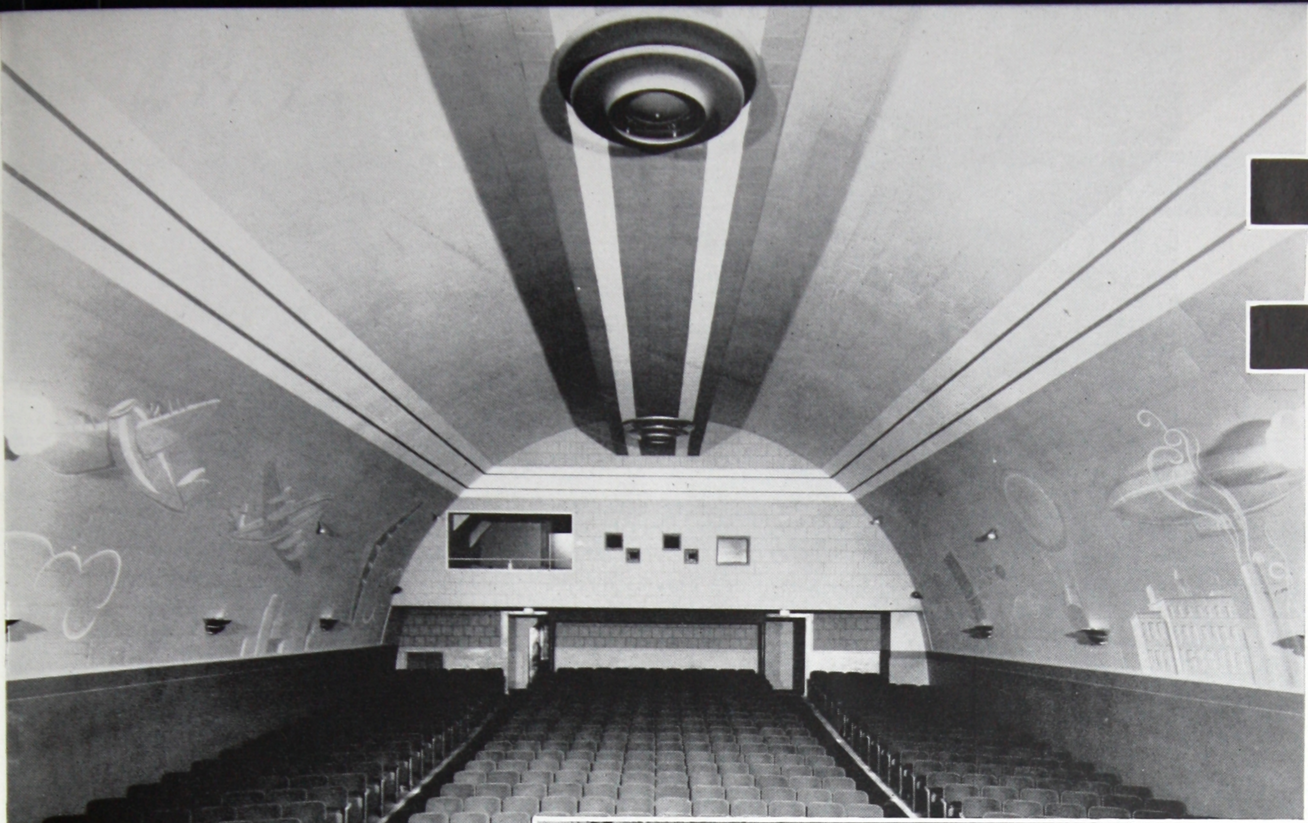


Above: National Broadcasting Company studios, Hollywood, Calif. Six studios spanned with 60′ timber trusses designed and fabricated by Summerbell Roof Structures, Inc., Los Angeles, Calif.

Left: Theatre under construction, Grafton, Wis. Miles Belongia, Architect, Milwaukee. Glued laminated 43′ rafters spaced 2′ o.c. Size of rafters 1¾″ x 9″. Height at center 21′. Rafters by Unit Structures, Inc., Peshtigo, Wis.

Right: Theatre, Puente, Calif. S. Charles Lee, Architect. Steve Chorak, Contractor. Lamella roof 50′ x 150′ designed, fabricated and erected by Summerbell Roof Structures, Inc., Los Angeles, Calif.



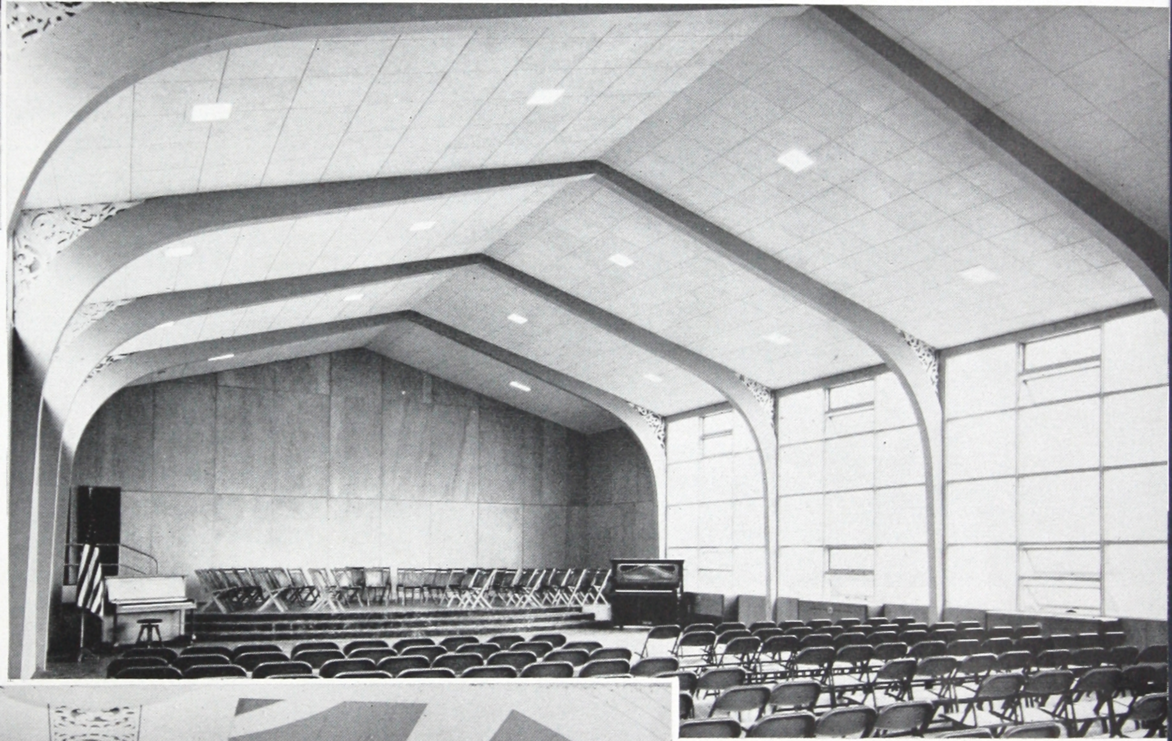


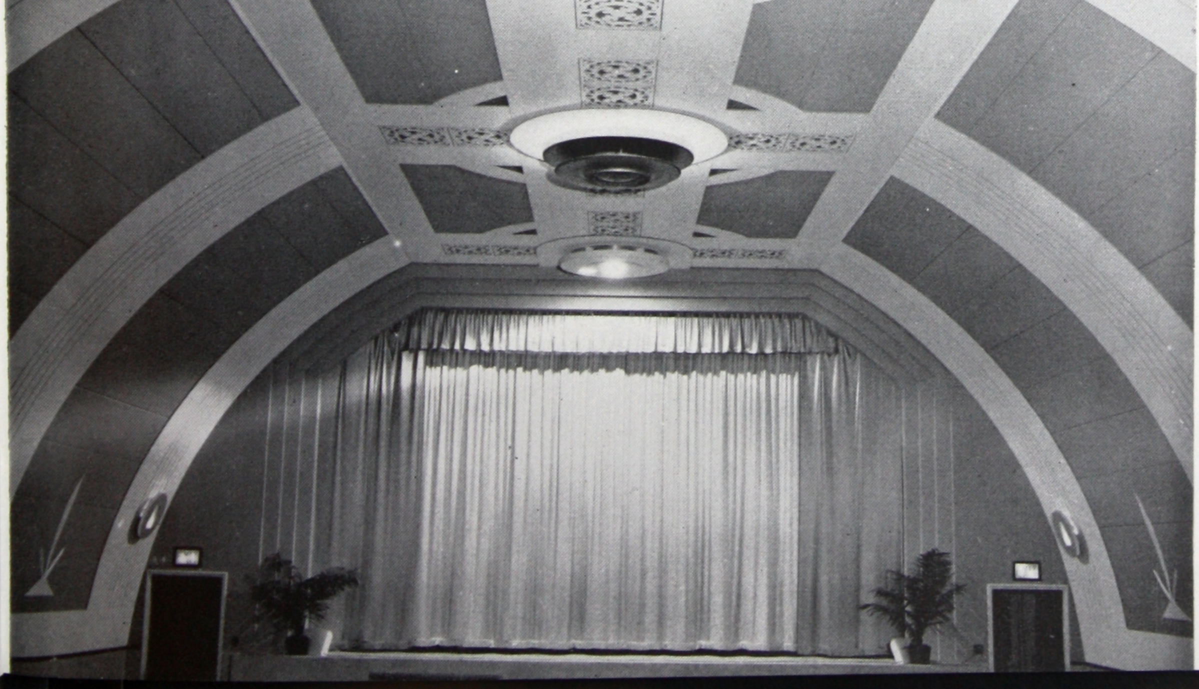
STUDIOS

THEATRES

Above: **Airway Theatre**, Milwaukee, Wis. Miles Belongia, Architect, Milwaukee. Glued laminated 50′ rafters designed and fabricated by Unit Structures, Inc., Peshtigo, Wis.

Below: Theatre, Kiester, Minn. Glued laminated arches designed and fabricated by Rilco Laminated Products, Inc., St. Paul, Minn.

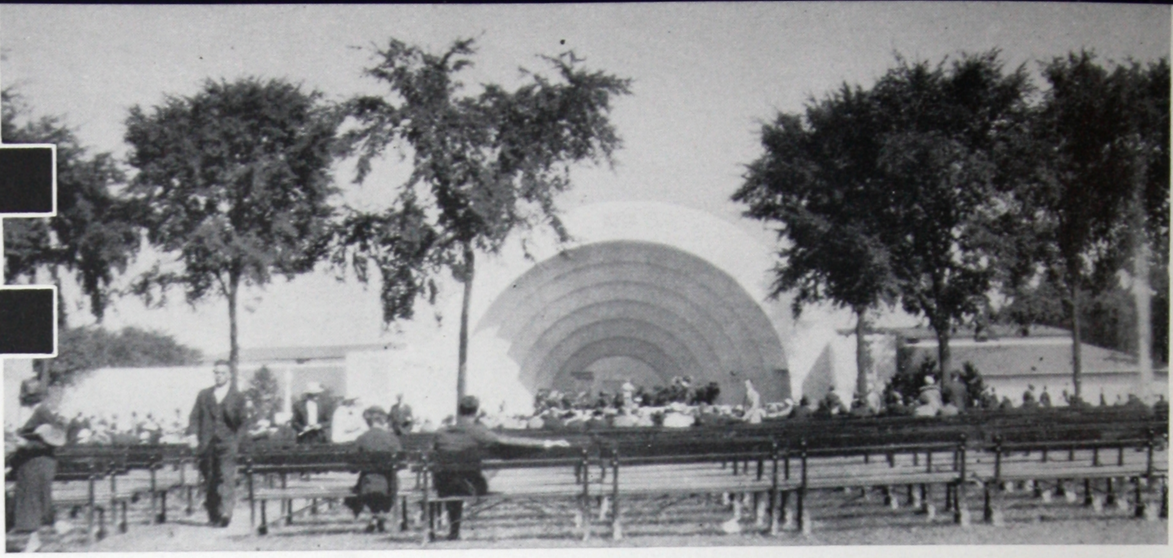




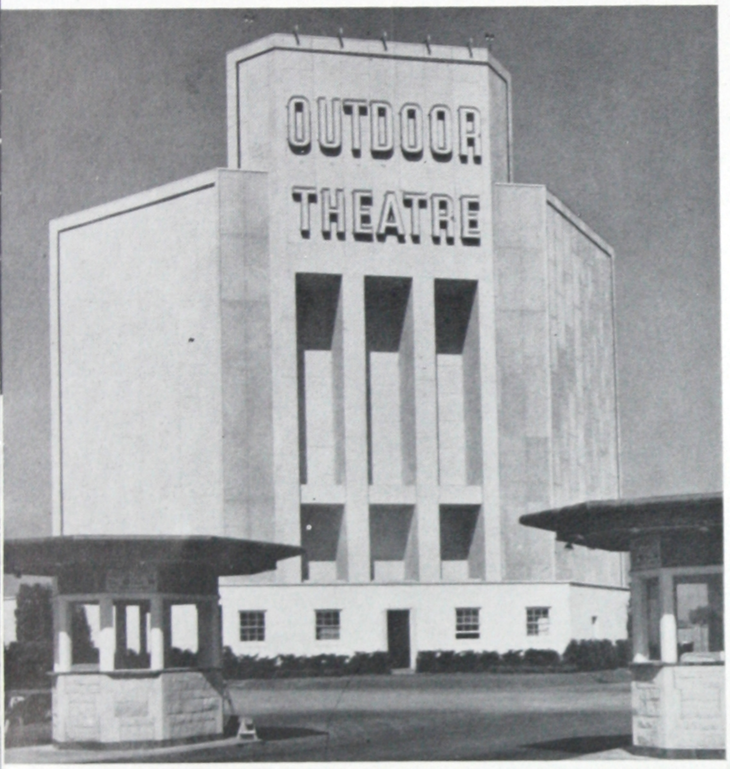
Above: Auditorium, Edison Elementary School, Pullman, Wash. Glued laminated 40′ arches designed and manufactured by Unit Structures, Inc., Peshtigo, Wis.

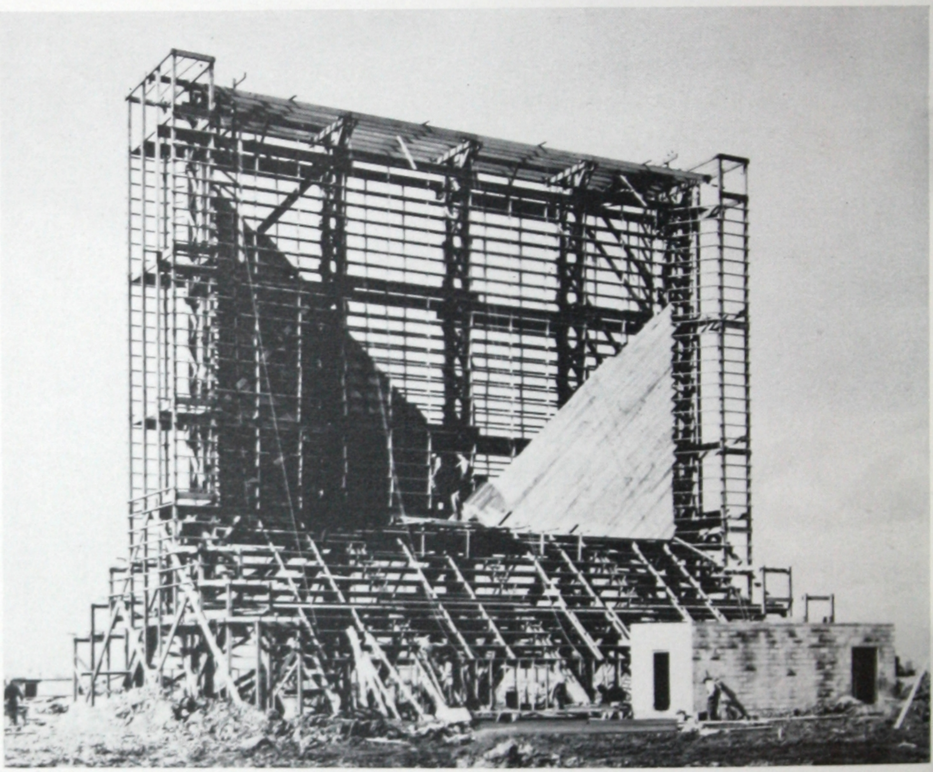
ORCHESTRA SHELLS

OUTDOOR THEATRES



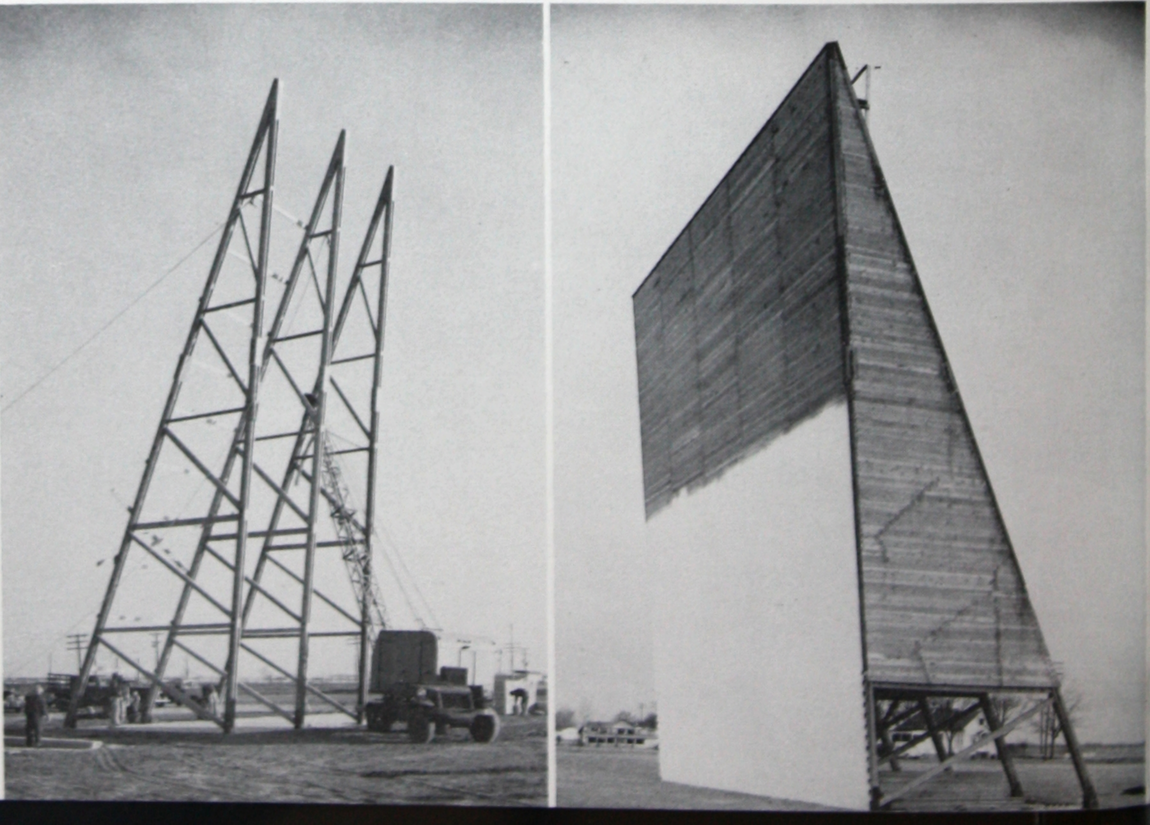
Orchestra Shell, Michigan State Fair Grounds. Teco connectors supplied by Timber Engineering Company of Michigan, Detroit.





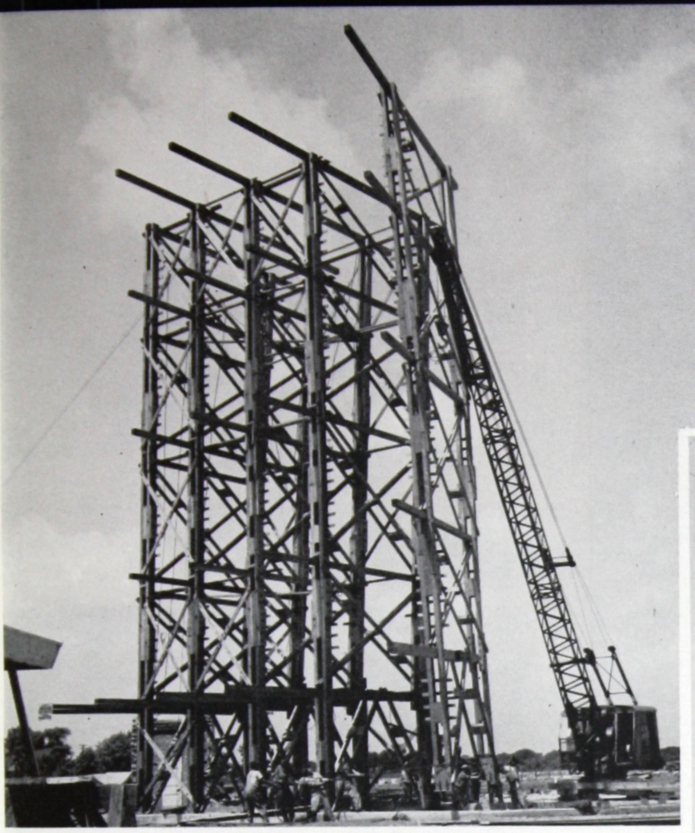
Center Right: Oak Lawn Drive-in-Theatre, Chicago, Ill. Designed and fabricated with Teco timber connectors by McKeown Bros. Company, Chicago.

Above: Attractive facade of Chicago open-air theatre. Timber framework used Teco split rings. The framing was prefabricated at job site by Morris Handler Co., general contractor; the architects were B. Leo Steif & Co., and the structural engineer was Henry Miller, all of Chicago.

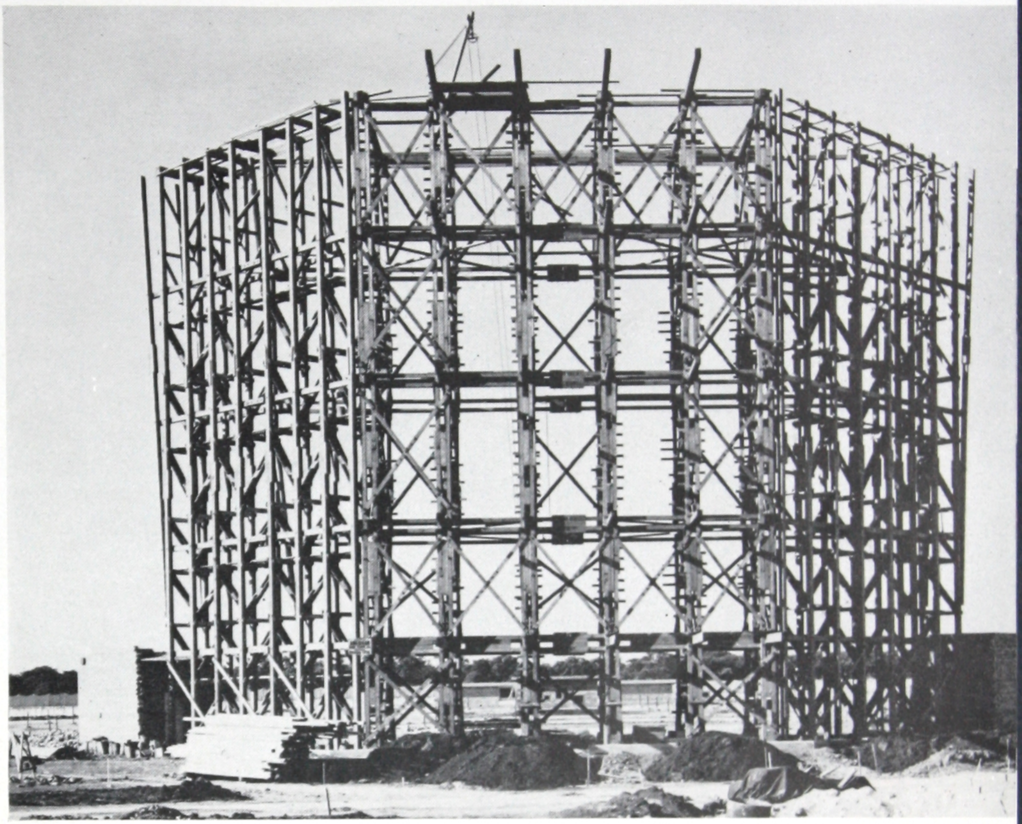


Right: Left, erecting 3 of 6 masts, and right, completed wood screen for drive-in-theatre, Kirksville, Mo. Masts designed and fabricated by Rilco Laminated Products, Inc., St. Paul, Minn.

Left: Erecting 90′ bents for Chicago, Ill., outdoor theatre. Teco split rings and shear plates used in framing.

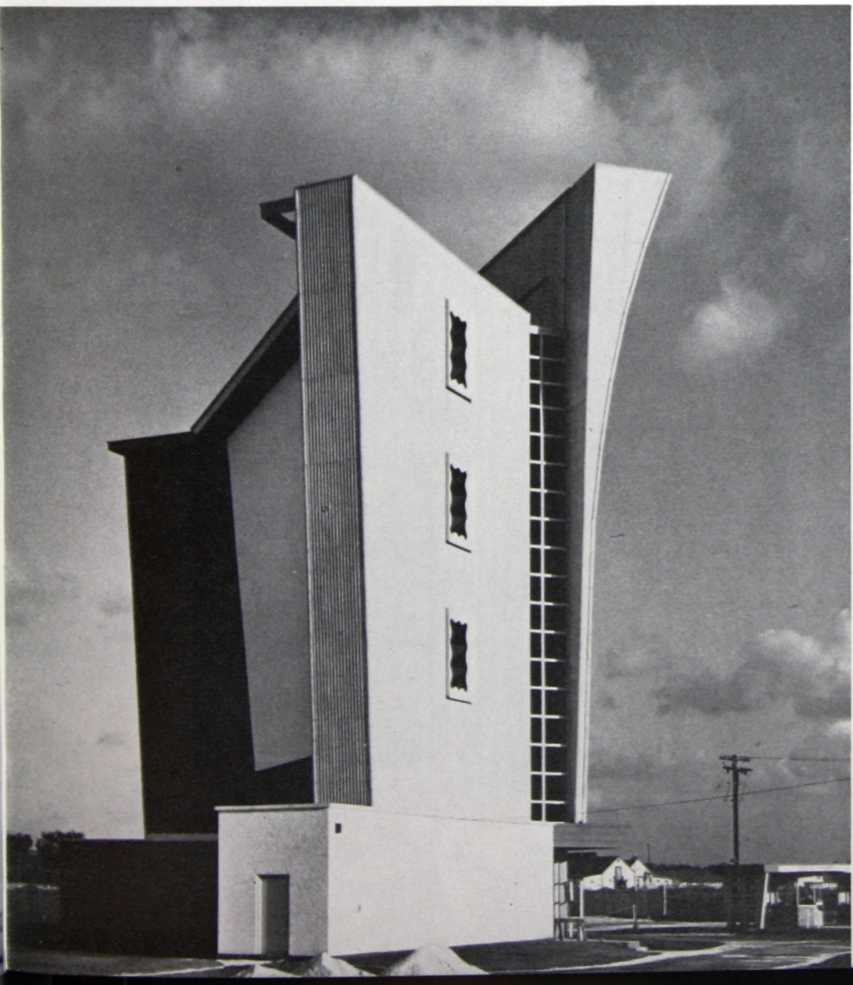


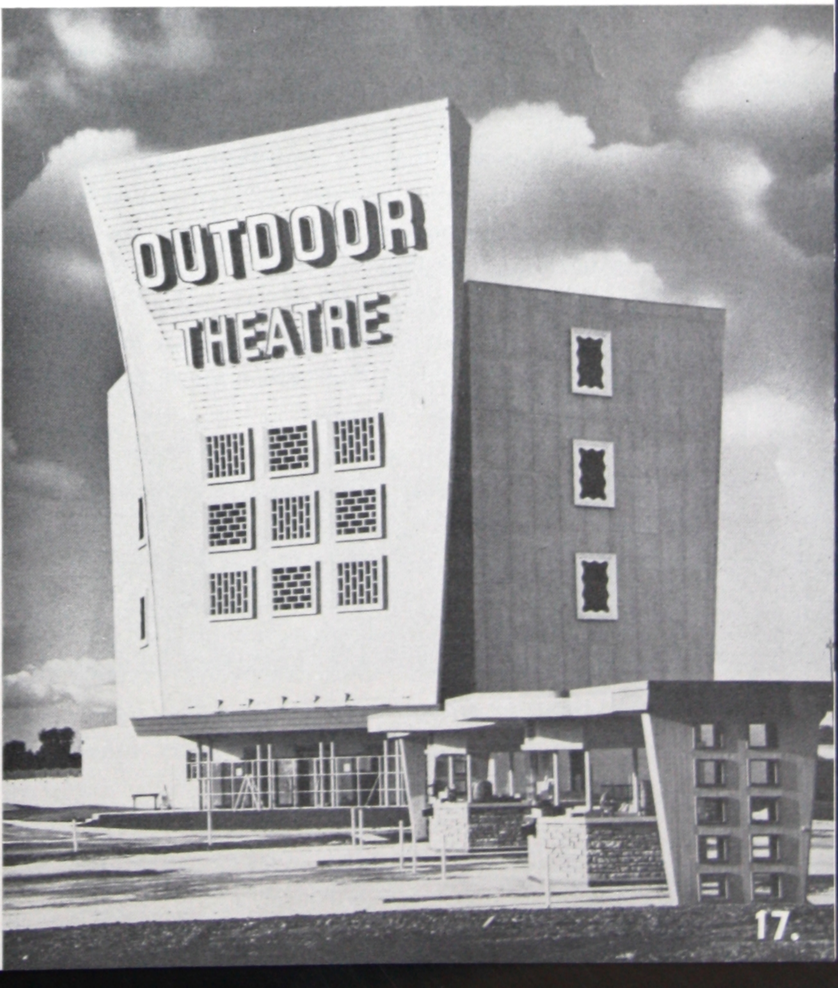
Below: Twenty 90′ bents in place. This is said to be largest outdoor screen in the country.



Lower Left: Side view completed tower and screen. Benjamin Stein, Architect. Morris Handler Co., General Contractor. Henry Miller, Engineer.

Lower Right: Front view tower. Timber framing fabricated by Edward Hines Lumber Company, Chicago. Assembly and erection were by American Roof Truss Company, Chicago.





KNOW YOUR WOOD

WOOD STUDY KIT

for **Wood Technologists**, **Teachers**, **Students**, **Libraries**, **Young People**, **Customers**

Now you may have a complete wood study kit of your own—one that not only provides a specimen of each important commercial species of wood produced in the United States, but also contains a manual describing the species, a knife that will permit you to cut smooth surfaces on the samples and a special hand lens to examine the exposed wood structure.

Each kit neatly packaged in a small wood box (8½" x 7½" x 6") contains 54 wood and wood products specimens size ⅜" x 2¼" x 5". The 84-page manual describes the uses and properties of each species. It is illustrated with 51 magnified cross sections and gives directions for identifying the various woods. With the wood carving knife you can cut smooth surfaces on the ends of the samples for study with the specially made Teco 10-power hand lens.

Technologists, students and others who want to know more about wood will find the kits take care of a long, unfilled need. Teachers, libraries, Scout troops, Four H Clubs and the like will appreciate their educational value.

Manufactured and sold by Timber Engineering Company, 1319-18th Street, N.W., Washington 6, D.C.

Price $8.50, delivered anywhere in the continental U.S. Outside the continental U.S. price is $8.50 f.o.b. Washington, D.C.

TIMBER TESTING LABORATORY

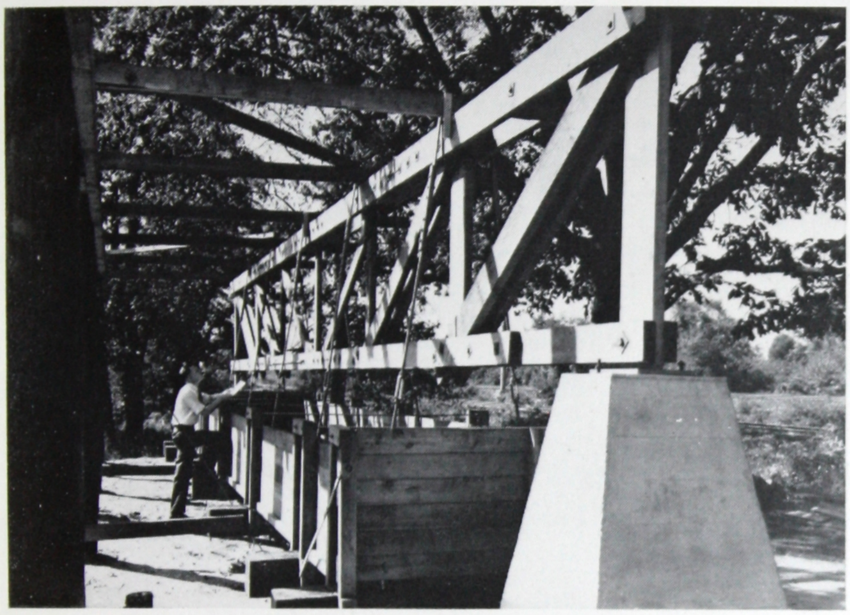
The Timber Engineering Company, an affiliate of the National Lumber Manufacturers Association, opened its testing laboratory in 1944.

The company provides its equipment, the experience of its wood technologists, engineers, chemists and analysts to help find practical, commercial answers to problems confronting the manufacturer and user of wood products and wood derivatives.

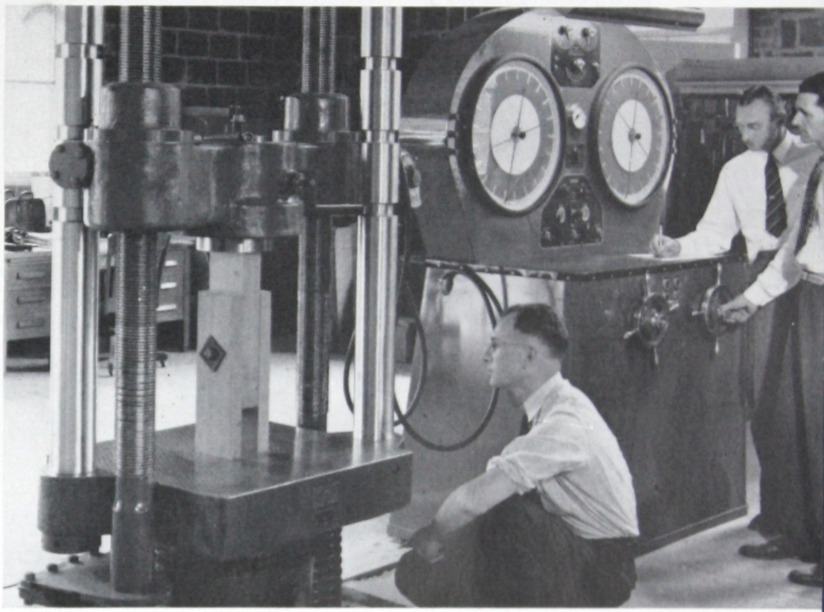
Illustrated on this page are typical tests conducted in the laboratory to improve the use of timber as an engineering material. Tests here lead to the development by our engineering department of the economical Teco trussed rafter, which has gained wide acceptance in the building of over 40,000 housing units.

Our laboratory has the only timber testing rig in the country for testing full scale timber trusses up to 50′ in span.

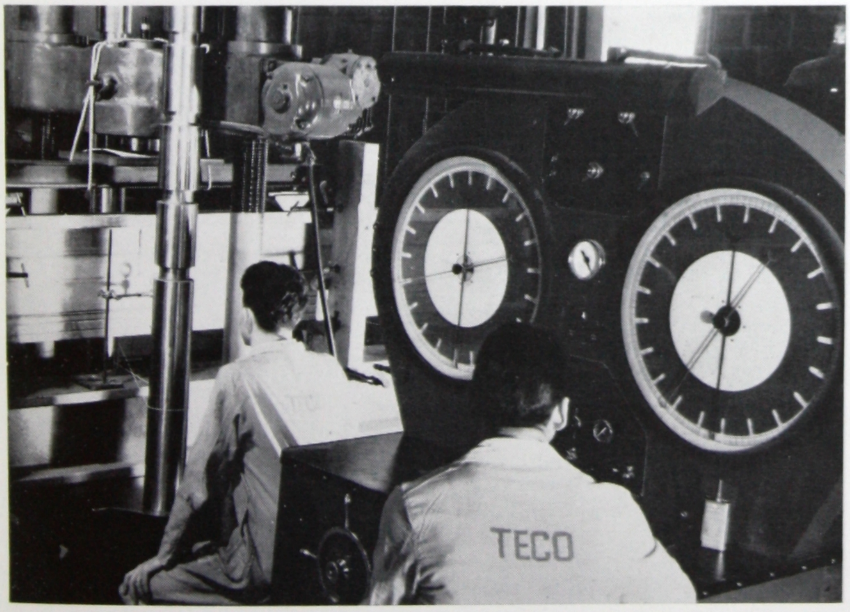
Consultations may be made by appointment and without obligation. Inquiries are invited from industrial firms, financial institutions, government agencies and others interested in improved wood utilization.



Testing a 50′ Flat-Pratt truss in full scale testing rig at the Timber Engineering Company laboratory. This is the only rig for testing full scale timber trusses in the U. S.

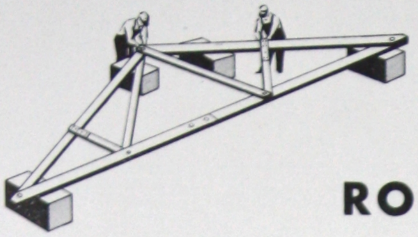


Testing a timber connector specimen in 200,000 pound testing machine. This apparatus will test with accuracy specimens ranging in size from match sticks to heavy roof trusses.

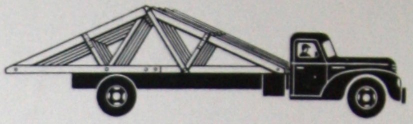


Determining the strength of a built-up wood girder. Proper design of these girders made possible their widespread use in prefabricated houses.

Main building Timber Engineering Company laboratory, Washington, D. C.



ROOF TRUSS FABRICATORS



ARKANSAS

Guy D. Smith
Smith Fabricating Shop
Hot Springs

CALIFORNIA

Associated Wood Products Co.
1335 6th Street
Berkeley

Summerbell Roof Structures
825 East 29th Street
Los Angeles 11

Summerbell Roof Structures of Northern California
1746 13th Street
Oakland

Timber Structures of California, Inc.
1014 8th Street
Sacramento

Timber Structures of California, Inc.
P. O. Box 25, Fruitvale Station
Oakland

DISTRICT OF COLUMBIA

James H. Carr, Inc.
1421 22nd Street, N. W.
Washington 7

Lank Woodwork Co.
First & K Streets, S. E.
Washington

FLORIDA

Timber Fabrication & Construction Specialties
P. O. Box 997
Little River Station
Miami

ILLINOIS

American Roof Truss Company
6850 Stony Island Ave.
Chicago 48

McKeown Bros. Co.
5303 S. Keeler Ave.
Chicago 32

Summerbell Truss Co.
4230 W. Taylor Street
Chicago 24

Timber Structures, Inc.
120 La Salle Street
Chicago 3

INDIANA

H. & K. Products
La Porte

Laminated Rafters, Inc.
North Detroit Street
Warsaw

IOWA

General Timber Service, Inc.
P. O. Box 447
Dubuque

KANSAS

Rilco Laminated Products Co.
4th & Cherry Sts.
Independence

LOUISIANA

Crawford Company
1901 Third Street
Baton Rouge 1

Lafayette Lumber Co.
Lafayette

Lumber Products Mfg. Co.
2730 Cleo Street
New Orleans

MAINE

Morgan C. Elmer, Inc.
Rockland

MARYLAND

Maryland Modern Housing Corp.
P. O. Box 7345
Baltimore 27

Weyerhaeuser Timber Co.
Fairfield
Baltimore

MICHIGAN

Mower Lumber Co., Inc.
Iron River

Timber Services, Inc.
8316 Woodward Avenue
Detroit 2

MINNESOTA

Rilco Laminated Products, Inc.
601 W. Main Street
Albert Lea

Rilco Laminated Products, Inc.
1st National Bank Bldg.
St. Paul 1

Weyerhaeuser Sales Co.
1st National Bank Bldg.
St. Paul 1

MISSOURI

Roof Structures, Inc.
122 West Lockwood
Webster Groves

Timber Structures, Inc.
812 Temple Bldg.
Kansas City

NEBRASKA

Nebraska Bridge Supply & Lumber Co.
Leavenworth at 40th St.
Omaha 5

NEW JERSEY

Weyerhaeuser Timber Co.
P. O. Box 629
Newark

NEW YORK

Cartwright & Morrison
Holcomb

Roof Structures, Inc.
45 West 45th Street
New York City

Timber Structures, Inc.
535 Fifth Avenue
New York 17

OKLAHOMA

Barney Stewart Wholesale
910 North Walker
Oklahoma City 2

Universal Fabricating & Mfg. Co.
218 E. Randolph
Enid

OREGON

Miller Gardner Fabricating Co.
Monroe

Timber Structures, Inc.
P. O. Box 3782
Portland 8

PENNSYLVANIA

Rilco Laminated Products, Inc.
Brooks Building
Wilkes-Barre

RHODE ISLAND

Weyerhaeuser Timber Co.
Portsmouth

TEXAS

Connector Truss Co.
707 Hughes Street
Houston 3

Timber Structures, Inc.
3906 Lemon
Dallas

WASHINGTON

Long Bell Lumber Co.
Longview

Prefabricated Lbr. Prod., Inc.
P. O. Box 1628
Tacoma 1

Triangle Truss Co.
3201 Fremont Avenue
Seattle

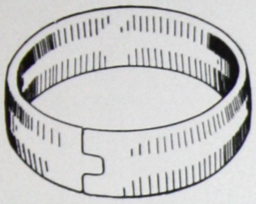
Weyerhaeuser Sales Co.
P. O. Box 1337
Tacoma

WISCONSIN

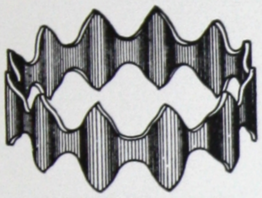
Unit Structures, Inc.
Peshtigo

TECO TIMBER CONNECTORS

FOR LIGHT AND HEAVY TIMBER STRUCTURES

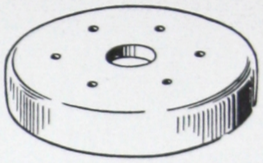


SPLIT RING
Pat.

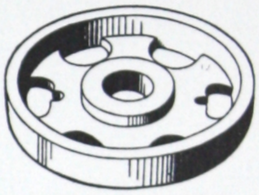


TOOTHED RING

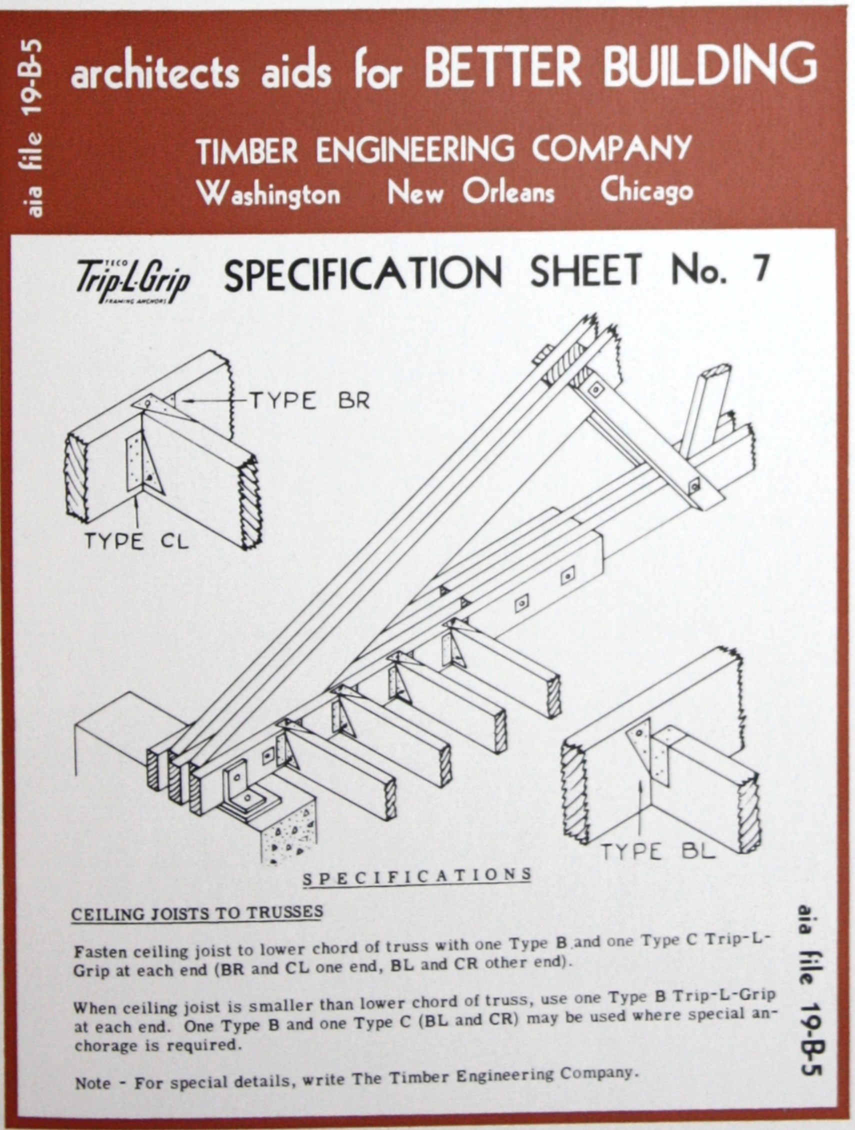
Teco Timber Connectors are devices for increasing the strength of the joints in timber construction. They are placed between adjacent faces of overlapping timbers to develop the full working stresses of the lumber. The connectors accomplish their purpose by providing a large area for the surrounding timber to bear against. This eliminates the small bearing area provided by a bolt, and enables the stresses to be distributed over practically the entire cross section of the timbers involved. Connectors hold the timbers in place much more firmly and rigidly than bolts and nails and permit use of lumber in economical sizes. The connectors are placed in the timber in precut grooves or through pressure embedment.



PRESSED STEEL
SHEAR PLATE
Pat.



MALLEABLE IRON
SHEAR PLATE
Pat.



aia file 19-B-5

architects aids for BETTER BUILDING

TIMBER ENGINEERING COMPANY
Washington New Orleans Chicago

TECO Trip-L-Grip FRAMING ANCHORS SPECIFICATION SHEET No. 7

TYPE BR
TYPE CL
TYPE BL

SPECIFICATIONS

CEILING JOISTS TO TRUSSES

Fasten ceiling joist to lower chord of truss with one Type B and one Type C Trip-L-Grip at each end (BR and CL one end, BL and CR other end).

When ceiling joist is smaller than lower chord of truss, use one Type B Trip-L-Grip at each end. One Type B and one Type C (BL and CR) may be used where special anchorage is required.

Note - For special details, write The Timber Engineering Company.

aia file 19-B-5

TRIP-L-GRIP FRAMING ANCHORS

Just as TECO connectors serve to strengthen primary timber joints, so do Trip-L-Grip Framing Anchors make stronger secondary connections in wood framing.

Trip-L-Grip provide the ideal connection for anchoring rafters to trusses or purlins, girts to columns, floor joists to beams, ceiling joists to beams or trusses, beams to posts and ceiling joists to small headers.

Wind anchorage is always a factor. With these anchors, rafters are tied tight—a strong guard against uplifting of roofs in high winds. For earthquake areas Trip-L-Grip are also useful in knitting the entire structure into a better shock absorbing unit.

Architects' specification sheets here illustrated are available free upon request to the Timber Engineering Company.

LUMBER LITERATURE

National Lumber Manufacturers Assn.

1. Wood Structural Design Data is a 300-page book published by the National Lumber Manufacturers Association. It contains complete tables of safe loads for wood joists, beams and columns covering the full range of commercial sizes, species and grades, and of the spans and heights ordinarily used. The book contains in addition much information on the grading of structural timber, properties of sections, board feet per linear foot and other data useful to designers. Price $2.00 per copy: with following supplements $2.25, U. S. Postage paid.

Wood Structural Design Data Supplements

Supplement 3. Maximum Spans for Joists and Rafters.

Supplement 5. Wood Trusses—stress coefficients, length coefficients and angles.

Supplement 6. Stud Walls—safe axial loads.

2. National Design Specification for Stress Grade Lumber and Its Fastenings. 1944, revised 1950. The industry specification recommended by the National Lumber Manufacturers Association. A 64-page technical bulletin. Free.

3. Heavy Timber Construction Details. 16 pages. Detailed drawings and specifications for heavy timber construction, as recommended by the National Board of Fire Underwriters. Free.

4. Lumber Literature. 56 pages. This booklet lists printed information available through the Federated Associations of lumber manufacturers which compose the National Lumber Manufacturers Association.

Practically all commercially important American species of wood are available through the member mills of the Federated Associations. Therefore, this listing includes most of the literature available on lumber and its use. Free.

5. Exposing the Termite. Booklet giving brief history of the termite, how to detect its presence, and good construction methods of preventing termite attack. Free.

Timber Engineering Company

1. Teco Design Manual. A 28-page bulletin giving technical data on Teco connectors. This Manual contains complete information for the use of engineers in designing wood structures. Free.

2. Typical Lumber Designs. A bulletin listing over 400 typical designs for various types of light and heavy frame structures. Designs include quantities and material lists. Free.

3. Installing Teco Timber Connectors in Light and Heavy Structures. Pictorial booklet showing fundamental procedure for installing connectors in timber joints. Free.

4. Trip-L-Grip Framing Anchors. Six-page booklet illustrating the use of anchors in secondary connections in wood framing. Free.

5. Modern Home Planning. An 8-page booklet showing the economy of Teco trussed rafters for homes, garden apartments, and short span commercial and industrial buildings. Free.

6. School Buildings Your Tax Dollars Can Afford. A 24-page pictorial bulletin for school architects giving cost data and design suggestions for one story schools of wood frame construction. Free.

7. Lumber Fabricators Directory. A 12-page listing of firms equipped to furnish fabricated lumber and timber. Free.

8. Architects Specification Sheets. A series of 9 sheets illustrating the most common uses of Trip-L-Grip framing anchors. Free.

9. Wood Frame—Teco Trussed Rafters. A 12-page booklet illustrating the wide use of trussed rafters in housing, commercial and industrial buildings. Free.

10. Timber for Military, Commercial and Industrial Buildings. A 20-page pictorial for architects. Free.

11. Churches. A 36-page pictorial for architects showing churches using Teco, Glued Laminated and Lamella construction. Free.

TIMBER ENGINEERING COMPANY

1319 18th STREET NORTHWEST, WASHINGTON 6, D.C.

NEW ORLEANS DISTRIBUTORS IN PRINCIPAL CITIES CHICAGO

Printed in USA
11-50—20M